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UCL Legacies of Eugenics Project

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Contents of Volume VI.

Articles : PAGE

American Education and American Life 257
(Helen M. Wodehouse)

American Education, Some Observations on 63
(Meyrick H. Carré)

American Universities, Recent Developments in 151
(Meyrick H. Carré)

English and American Secondary Schools, Plan for a Comparative Study of 73
(Arthur J. Jones)

Examinations, Some Effects of Age in Selective 270
(Frank Sandon)

Experiment in Method for Junior Schools, An 217
(Eve Macaulay)

Hand-Eye Co-ordination, Some Tests and Correlations of 127
(Fred Ackroyd)

History, The Teaching of 119
(Caroline Ryley)

Holism and Education 113
(J. Sachs)

Intelligence Tests, A Statistical and Psychological Investigation of 38
(David W. Oates)

Science, The Teaching of, and the Training of Science Teachers 241
(A. Pinsent)

Scientific Interests of a Boy in Pre-School Years, The 17
(Two Parents)

Secondary Schools Admission Examination Scores, The Treatment of 144
(J. W. Collier)

Articles :

PAGE

Two Year Training Colleges, The Function of the 156
(E. M. Jebb)

Training College Curriculum, The 3
(Winifred Mercier)

" Vocational " and " Cultural " 207
(F. Clarke)

Critical Notices :

Board of Education Consultative Committee : The Next Step in National Education 79
(Helen M. Wodehouse)

Brown, William : Mind and Personality 167
(R. J. Bartlett)

De Hovre, Fr. : Essai de Philosophie Pedagogique 84
(G. H. Turnbull)

Judd, C. H. : Psychology of Secondary Education 161
(W. J. M'Callister)

McDowall, R. J. S. : The Mind : A Series of Lectures delivered at King's College, University of London 164
(Shepherd Dawson)

Spearman, C. : The Abilities of Man : Their Nature and Development 82
(Cyril Burt)

Wilson, J. Dover : The Schools of England 281
(F. A. Cavenagh)

Wray, W. J., and Ferguson, R. W. : A Day Continuation School at Work 88
(Stanley H. Watkins)

The Forum of Education.

Vol. VI. No. 1. February, 1928.

The Training College Curriculum.*

By Winifred Mercier.

Snakes in Ireland have ever been a favourite subject for discussion, although the inevitable conclusion must follow, "There's no sich thing." My subject comes perilously near to meriting the same short shrift, for "there's no sich thing" as *The* Training College Curriculum. Thus, I cannot speak as President of the T.C.A., but solely as an individual and expect as many dissenters as listeners.

There is, however, a unity below the diversity, and though curricula may vary yet common principles may be held, and these can be discussed. The subject is large, the time is short, and, in many respects, I must be fragmentary. In particular, I will speak only of curricula for women, the problems specifically connected with men I will leave for the discussion. I will also omit all curricula in existence in training colleges which are part of the preparation for degree courses, and confine myself entirely to courses which lead to the Board of Education certificate or alternative examinations.

In fact, everything I say is conditioned by the recognition of two main routes into a teacher's first post: (1) The four-year university route, and (2) The two-year training college route. The training college has as its main aim the preparation of class teachers, and thus embraces within its scope all the elements of a young child's education. It thus differs from the university course in being less specialized. Moreover, it is vocational throughout. (The training college student who takes a third year (non-degree) course is, I submit, a valuable and, indeed, an indispensable link between the two systems, giving freedom to the individual and flexibility to the system.)

The training college course is younger than the university course by some hundreds of years, and it has laboured for long under the disability of adverse comparison with it. A close alliance promising mutual benefit between the two courses is in view, but alliance need not mean assimilation or absorption. The training college course must be considered on its own merits, not as inferior to or superior to any other course, but as a considered and indispensable part of the national provision for the training of teachers. "Diversity of gifts but the same spirit" is surely the ideal of every corporate body, and unless there is diversity of gifts of training and of outlook within a united teaching profession, we cannot meet the almost infinite varieties of educational demand.

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*A paper read at the Conference of the Training College Association with the Association of Directors and Secretaries of Education.

To compare small things with great, the temptation of a political philosopher to sketch a Utopian state cannot surely be stronger than that of the training college lecturer to plan an ideal course of training. But it cannot be. We have to base our curriculum on the actual (often on the alleged) qualifications of the entrance candidates, and adapt it to the needs of the present schools. This is not all, however. Modern society is dynamic and not static. Education must be dynamic, and in this country it is very much alive. When the students who will leave the training colleges next summer are at their maturity, twenty to thirty years hence, they will have to meet situations we cannot forecast. It would be possible to train teachers highly competent to enter the present schools, but unable to adapt themselves to the changes which must inevitably come. This third factor in the formation of a curriculum is at least equal in importance to the other two, for if a teacher is not self-educating the knowledge acquired before she is twenty-one will soon grow stale and out of date, and she will become a drag upon the progress of the schools. The salt will have lost its savour and wherewith shall it then be salted? We have to take account, then, of the candidate's previous education, the immediate needs of the schools, and the future of education.

The Candidate's Previous Education.

(As time presses we must confine ourselves to the last two years of the school life of those who stay at school until eighteen, and omit also any consideration of the student teacher year.)

The courses leading to the higher certificate are being widened and, more important still, careful arrangements are being made for the last two years of those who do not profit by a higher certificate course. In the meantime, however, one cannot but state the fact that candidates who have spent a third part of two years in the study of French or Latin, and have not touched geography or nature study or arithmetic since the first examination stage, nor music nor drawing for two years before that, do present great difficulties. The problem, however, is being tackled vigorously in many schools, and there is no doubt that in a few years the situation will be much improved. A difficulty far more fundamental is the candidate's poor grasp of her mother tongue. Few have any power of clear exposition or description, few can read books so as to abstract the information in them, few can express simply in writing what they think. It is a curious fact that while comment is rife on the inability of the young teacher to teach arithmetic, one hears litttle or nothing of her inability to teach the English language, yet the latter is the more serious failure, and, incidentally, the cause of much weakness in arithmetic teaching. The language problem restricts the curriculum at every point. It is, in fact, the greatest single problem with which we have to deal in the training colleges.

The Young Teacher's First Post.

In many cases, though not in all, she will be asked to teach her class all subjects of their study, usually about eleven in number. These subjects are not the same as they were twenty years ago ; no subject remains the same for long. Physical training now demands a knowledge of and skill in many kinds of organized games and in country dancing. In the drawing lesson the teacher once placed a freehand copy in front of her class and her work was done, but now they must paint, draw from groups and from memory, design, and illustrate. In English, dramatic production and speech training are expected. Is it any wonder that we hear the younger generation of teachers disclaim omniscience and assert they cannot teach this or that ? The old idea that a teacher could issue from the training college fully prepared at every point for her life work, as Pallas Athene fully armed from the brain of Jupiter, belongs in date and in genus to the idea of the finishing school. Do not let us stifle too hastily this discontent, awkward as it is, for it may have within it the germs of a re-formation in curriculum and organization. In fact, we may already trace in the schools some of the changes which should ameliorate the present situation.

Changes in Organization in the Schools.

Young pupils under thirteen or fourteen, in whatever type of school they are being educated, need a class teacher who knows them well, and teaches them most of the subjects they learn. If they are taught by as many as five or six different teachers their general training will suffer. On the other hand, if they are in the exclusive charge of only one teacher for six months or a whole year both they and she will suffer. The cricketer will never become a batsman if he faces one style of bowling only; children will lack mental alertness if in effect the bowling is not occasionally changed. The primary teacher, then, must be a class teacher in all subjects except one, or two, or three. Frequently one hears from old students all over the country: "I take Miss A's geography and she takes my drawing," or "I take Miss B's physical training and she takes my nature study," or "I have four classes in music, but I don't take needlework or history." If there are only two teachers in a country school interchange of subjects is still possible as well as desirable. In preparing two or more sets of history or drawing lessons a week a teacher gains a wider knowledge of the subject and takes a stronger grasp on its essentials. Interest grows with knowledge, and hundreds of teachers testify to the added zest and efficiency that this interchange of classes brings.

Changes in Method.

We are all agreed that there is still far too much oral teaching in our schools. "Chalk and talk" was stigmatized long ago as an educational failure, and we need not discuss its evils. At present it is no use blaming the teacher if it still persists. The ratepayer must pay for more books; in fact, the President has told them so. If the class is equipped with a suitable book no young teacher should be unable to make use of that book as the basis of a really useful course of instruction. She can learn enough to explain it and expand it where necessary, and the more she eliminates herself and teaches the children to teach themselves from the book so much the better. This is no argument for the uneducated, untrained teacher. In order to choose books for children and to teach them to use them intelligently, the teacher must be free of the world of books herself, capable of discrimination, criticism, and discussion. In short, she must have had the intellectual training appropriate to the college or university stage. On a practical subject, such as needlework, drawing, or handwork, there are helpful books—of varying value, it is true. If every school could draw on a collection of books on the teaching of the practical subjects, and was provided with good class books for the children, we should hear little of the ignorance or unwillingness of the teacher. The answer to the question, "What shall I do with my young assistant who says she can't teach so and so?" surely is "Give her a book." If she cannot use it in such a way as to set the class to work she must be reckoned a failure. The better educated the teacher the more, and not the less, is she dependent upon books.

It is somewhat ironic that our primary education should often be stigmatized as too bookish when the lack of books is one of its chief drawbacks. It is an inverted kind of truth, however, for books are only one type of tool which the child requires. He must also do and make with other material, with wood, metal, clay, paper, cardboard, raffia, according to his age and immediate aim. We want to see a school a workshop and not a place for listening in ; a place where boys and girls work with hands and eyes and bodies directed by their busy brains. The test of a teacher's capacity lies in her power to set her children to work. A good teacher might fail where an indifferent one achieved a fallacious success with the soothing syrup of constant talk and description. Thus, before we can assess the value of a system of training, the young teachers must be able to try out their powers in schools well supplied with books and material by an enlightened race of ratepayers.

Changes in Educational Outlook.

At this time of year the educationists of the country sooner or later lament the stranglehold which the separate subjects have gained on education. As the subjects grow from more to more less of knowledge in us dwells. Happy only is the infant who has no subjects. It is recognized that the division of the time table into a patchwork quilt of short lessons on separated and unrelated subjects actually prevents the growth of a central intellectual interest, and thus leads to inaccuracy and the lack of a thorough grasp of anything. Many schools are tackling the problem from one angle or another, and breaking down the artificial barriers between the subjects, which lead to the watertight compartmented mind we know so well not only in training colleges, but in universities. " To be able to apply what they know " is always the demand made upon the pupils by the employers or any section of the public, and training on a time table divided up into short lessons on ten or twelve subjects gives the child little or no opportunity of applying the knowledge gained in one field to the problems which arise in another.

A single syllabus can include both history and geography, or both geography and science, or both literature and history, depending on the subject matter it contains. Drawing need not be taught at one and the same time as handwork. This is not correlation, which requires two related syllabuses, but the combination of the related parts of two or even more different subjects into one syllabus. The energies of the children are concentrated, and the relation of one sphere of knowledge to another is clearly seen. The teacher has a simpler and more satisfactory problem to tackle in one fuller and longer syllabus, instead of two shorter and unrelated ones.

If these changes could be encouraged, our young revolters may yet be acclaimed the heralds of a better age and not the failures of an incompetent system of training. Personally, however, I feel that they deserve little quarter if they base their incapacity on the grounds that they have not taken such and such a subject at college (by which they usually mean that they have not presented it for the certificate examination). There is no finality in education. The short two years at college are but a link in a lifelong process. In saying that, however, we assert their importance. If they fail, the chain breaks. We must turn next to what can be done in the two years, and I will suggest three principles which may govern the formation of a curriculum :—

(1) The curriculum must be homogeneous and inter-related and thus vocational throughout. There must be no dangerous division of interest between what have been called the academic and professional sides of the course, and as little separation between the subjects as possible.
(2) The curriculum must give the student space to grow. It must aim at teaching her to be self-educating, and if that aim conflicts with the completeness of her initial equipment the immediate present and not the future must be sacrificed.
(3) There should be a certain uniform minimum of equipment.

1.—*The curriculum must be homogeneous and inter-related.*

Two years is a short time. The average student of eighteen, whether straight from school or a student teacher, enters the college an immature, unformed school girl. We want her to leave a woman, with a purpose in life, capable of being entrusted with the lives of some forty to fifty children for five hours a day. We ask a great deal, and we ought in fact to be satisfied if we can count on a hearty desire to do and be what we ask.

The training college course must be, as it were, impregnated with a sense of work ahead well worth doing, and thus be vocational throughout. To say this is not to narrow or to limit its scope. Thring defined teaching as "the transmission of life through the living to the living.'' A teacher's vocational course must thus be liberal and life living, and be primarily directed towards fostering creative power. The imitative, the repetitive, the mechanical processes must be limited, the reflective, the inventive, the creative be encouraged. Into such a course the student must be dipped, as it were, into a bath, for unless she can take it in at every pore, two years is far too short a time in which to effect anything. We may, indeed, adapt Plato's beautiful image, " Dwelling as it were in a beautiful region, our youth may drink in good from every quarter, whence any emanation from noble works may strike upon their eye and their ear, like a gale wafting health from salubrious lands, and win them imperceptibly into resemblance, love, and harmony with the true beauty of (their profession.)''

The course will centre upon the practical study of how a child lives and learns and grows in health and happiness as a member of a school community. Practice in teaching, child study, and observation, discussion and demonstration lessons, the exploration of this method of teaching or that, are but different methods of approaching the central interest. They fertilize and enlighten each other, and form the heart of the course, but they must not stand alone. In the courses in geography or history, etc., the development of the student's own knowledge of the subject should proceed together with her study of its possibilities as a teaching subject. The present arrangements for the Board of Education final certificate provide for papers in the subject matter of English, history, and geography, and other unrelated papers in the methods of teaching these subjects. I do not believe that young inexperienced teachers can gain equal benefit from a system which thus divorces the study of method from the particular aspects of the subject with which they are for the time being most conversant. I am convinced that more thorough work can be done if the study of method is related closely to the particular matter of the special syllabus. The syllabus in English, or history, or whatever subject it may be, should in scope and difficulty go far beyond what is required for any class lesson, but it should embrace within it some material which affords suitable matter for school lessons.

In the second place, every effort should be made to show the bearing of one subject upon another. The course in handwork should aim not merely at deft manipulation, but at giving the student some intelligent comprehension of the place in the development of society of the historic crafts such as weaving, pottery, woodwork. Hygiene can embrace civics, literature can through poetry and tales embrace both history and geography. Old facts are thus freshly interpreted, new facts are learnt, and the various methods of presenting them to children are studied.

If too many subjects are undertaken at one and the same time, this wider view cannot be taken. But if we devote more time and thought to the interrelation of the subjects and to showing the light that one throws upon another we are breaking down the barriers that now divide subject from subject and which create those watertight compartments which prevent the development of a central intellectual interest. The process must needs be slow ; the student enters the training college with her mind rigidly divided. In two years comparatively little can be accomplished, and she then passes out into a school to find the same rigid divisions. But the circle must be broken somewhere, and I believe the training colleges will best serve education if they are encouraged by every means to explore the principles of the homogeneous and interrelated course, rather than to equip the student in every subject separately.

If the student has any ability at all she should be able to take one subject to an advanced level. The work done in this subject should illuminate her whole course and set free all her latent powers. In after-life she should be able to advise her colleagues in the conduct of this subject, and to assist the head mistress in drawing up the syllabuses for the school and in the choice of text-books, and, in general, promote the efficiency of that subject throughout the school. Specialization in this sense is much needed in the elementary schools. Much can be done where there is a member of the staff whose special duty it is to promote the interests of a subject or subjects, and is keen to inform herself in all aspects of its growth and development.

We can only glance at the special work of the infant and junior teacher. I find it wiser to give students two terms in which to discover their vocation for teaching either the younger or the older children. During these terms all can have some insight into the work of an infants' school, and unless this opportunity is given them few would choose infant work, through their ignorance of its possibilities. The work with older children is better known to them. This late choice involves certain difficulties in planning the curriculum, but I believe it is better for them to have made a less suitable choice of subjects in the first instance rather than to ask them to choose their type of training immediately on leaving the secondary school or the elementary school where they have been student teachers. They certainly feel a stronger vocation for the work when the choice has been before them for two terms, and it is better to enter the kingdom of their choice maimed of a subject than to have the right subjects and remain outside. Something must come first. The growth of courses in art, in crafts, and music at the top of the secondary school will help in the solution of this problem.

2.—*There must be space for growth.*

Since the curriculum was revised in 1919 so as to give to the individual more choice in the subjects of her study, nothing has been more remarkable in the training colleges than the growth of intellectual interest among the students. To exercise the power of choice, to develop special aptitude, to fulfil an ambition, are essential parts of the education of an individual after school stage. We must take risks here. We must learn dangerously, as well as live dangerously, if we are to avoid premature settlement and ossification of the mind. Knowledge without the power of growth is not only useless but dangerous. A teacher who cannot, or who does not wish to go on learning, will become a hindrance to the progress of education, and a danger to the intellectual development of hundreds of children. If too many separate subjects are undertaken at once interest and effort are dissipated, only the simpler, shorter books can be read in any one of them, and the whole standard of work is necessarily on the school plane. There must be time to reflect, to assimilate, to apply, time to read with freedom in a good library, time, in fact, to learn how to learn, time to grow from the school pupil to the student. To say that not everyone in the two years at college takes this step is only to say that a good teacher is rare. But if many are not called, few will not be chosen. Moreover, the step is often taken after the student leaves the training college provided she has had opportunities within it. While the student is thus being trained herself to use books, her life-long tools, she ought also to have practice in teaching children to use books. Here the training colleges are hampered. Very few schools can give the practice, books of all kinds are scarce, and, if found, sometimes poor and out of date. Many colleges attempt a practical solution of the problem by stocking sets of books, which the students can give to the class of which they are in charge for the time being. This is better than nothing, but, at the best, artificial. (Abundant evidence of the difficulties in training students caused by the lack of books in the schools was given in answer to a questionnaire sent out to its members by the Association last spring, in response to an enquiry from the Consultative Committee of the Board of Education.)

While the student is gaining freedom in the world of books, she must be gaining at the same time a far wider view of education than the purely bookish. She must begin to realize the educational possibilities of all forms of handwork. She must gain knowledge of materials herself, and dexterity, but, above all, she must begin to see how much can be learnt about the world in which we live, and how much creative power can be trained and developed by work in which both hand and brain are used, especially when that work, however simple, is part of some industry which has always played and will always play a formative part in the history of peoples, such as pottery, weaving, needlework, woodwork. Such a point of view grows slowly. If it is to come at all there must be time for growth.

3.—*The Essential Minimum.*

There are now four subjects taken by all students which are also subjects in the elementary school curriculum : English, the teaching of arithmetic, hygiene, physical training. (Students are examined in each of these subjects.) Arithmetic is the most controversial. The training colleges know only too well how badly many women students teach arithmetic. A young person of eighteen knows all the arithmetical rules which are necessary, has had a great deal of experience in applying them to the working of examples, has been tested by examination, and has passed. What she has now to master is the art of teaching children arithmetic. Training colleges then must provide a thoroughly sound course on the teaching of arithmetic, including experience in teaching it, in setting examination papers, in correcting children's answers, etc. To present mathematics as a subject in the certificate examination does not in my experience assist the student who is a bad teacher of arithmetic to teach it better. Unless she is mathematical, and few women students in training colleges are mathematical, the further study of geometry and algebra, etc., will not give her what she needs, and will only fill her time without increasing her general capacity. I believe it is thus entirely beside the point to attribute poor arithmetic teaching to the limited entry of women for the mathematics paper in the final examination. A good course on the teaching of arithmetic extending throughout a year, and including demonstration lessons and discussions on the lessons, ought to provide for a revision of the whole subject that will give the student a firmer grasp of arithmetical methods and processes than she had had before, in addition to setting her on the right lines in teaching children. A sub-committee of the Training College Association in

1925, as the result of information received from all the colleges, drew up a pamphlet advocating the extension of work on these lines. As far as one can see at present, even with the most careful training, there will probably always remain a small minority of women who, tested by experience, ought not, in the children's interest, to be entrusted with an arithmetic class. They must be regarded as failures in this respect. Careful training, on the other hand, ought to ensure that the very large majority can be trusted, with varying success of course, to take the subject sufficiently competently with children up to eleven at least. The training, however, must begin before the college stage. At present we are in a vicious circle. Many candidates enter the college not so much unprepared as wrongly prepared, with more to be unlearnt than can be forgotten in two years, and we must endeavour to break the circle at every point.

The same arguments can be used of the teaching of English. All must profess the subject. A minority probably will never be competent, though like those incompetent in arithmetic they may have compensating strength in other directions. The teaching of language, apart from the enjoyment of literature, is, as I observed before, terribly handicapped by the student's own limitation. Far less is heard of her deficiencies in this direction than in those subjects where success or failure are, perhaps, more easily found on the surface, but could they be made good, improvement would be effected over the whole of the teaching given in every subject.

Besides the four subjects mentioned the large majority of students take a course in Scripture, and are prepared to teach the subject. Although Scripture does not appear in the final examination for the certificate, nor in the code, yet the very large majority of students are being prepared to teach it, and the time and energy thus expended must be taken into account in any consideration of the training college curriculum.

Scripture (with a generous conscience clause removing it from the compulsory category), English, arithmetic, hygiene, and physical training, form a minimum no one, I think, would wish to reduce. Shall we add to this minimum? If so, what shall we add? Music, drawing, needlework, history, geography, science all have their advocates. There is no convergence of opinion on any one. If we do add one, *either* we restrict the student's choice over the rest of her course—a hampering and irksome thing for the better students—*or* we must increase the number of subjects by the new compulsory one, and inevitably depress the standard of all.

If I were obliged to include one I should certainly include handwork, as I believe that the outlook that a really good course in handwork should give is one essential to every teacher, especially to class teachers. I should, however, be very sorry to see it made compulsory for the reasons just given. If 75 per cent. of the students in a college are taking such a course and the other 25 per cent. see it in being and catch something of its aims and methods I believe more will be done than by compulsion. Compulsion is a dangerous method ; it needs to be kept well within bounds.

In addition to the uniform minimum the student studies at least three other subjects, sometimes four—i.e. (with Scripture), eight or nine in all ; or, if needlework and handwork are counted separately (a mistake), nine or ten. The subjects must be chosen according to the following plan :

Professional Group (*compulsory*).
Principles and practice of teaching.
Hygiene.
Physical training.

Group A.
English (taken by all students).
History.
Geography.
Science.
Mathematics.
+French.
Welsh.
Choose one.

Group B.
Singing and theory of music.
Drawing.
Needlework and Handwork.
+Housecraft.
+Gardening.
Choose one.

Choose three or, in cases where an advanced subject is not taken, choose four.

(In each subject there is an advanced and an ordinary course except in the subjects marked +, in which there is only an advanced grade.)

It is a great mistake to ask a student which subjects she has taken at college, and then decide she is incapable of teaching the rest. If asked, she naturally gives the subjects she has taken in the certificate examination, but she almost certainly took an additional subject for a term—quite a substantial help—and she ought to have had demonstration lessons in either all, or nearly all, the other subjects, and have taught them under supervision.

In the report of the *Departmental Committee on Training* it is suggested that the student in the training college should study one chosen subject for its own sake, and thus develop her aptitude and power, and take a vocational course in each of the other subjects of the elementary school curriculum. I feel there are dangers in this line of attack :

(1) There is a division of interest and aim here between the one subject and the many that might well prove dangerous. I believe that the whole course, not part of it, should be vocational. The distinction between one subject and another should be rather the amount of time available for it than the spirit in which it is pursued. The assumption that special gift, aptitude, or ambition is satisfied only in one subject might well be destructive of the unity of the course in its main aim. It is the survival of the old heresy of a sharp division between the academic and professional sides.

(2) The insistence on the separated subjects does nothing to break up the watertight compartments in the student's own mind and might well result in fastening a stronger tyranny of those subjects upon the schools.

I would rather tackle the problem as I have suggested :

(1) By the study of a limited number of subjects, but with syllabuses which are designed to show the relation of one subject to another and the overlapping of all fields of knowledge.

(2) By careful training in the use of books and materials of all kinds.

(3) By discussion and demonstration lessons and by teaching under supervision.

Lectures on the methods of teaching a subject apart from the study of the subject I have come to distrust profoundly. The student will usually do better without. This, I think, is probably due to that weakness in language which reduces the value of lecture courses to an extent only recognized by those who follow up the results of their own lectures in the teaching practice of the students, and partly to the inexperience of the students in actual teaching.

I believe that trained in the way I have indicated the young teacher, while being just as competent to tackle her first post, would prove more progressive in after-life.

Burke defined the British Constitution as "standing on a nice equipoise, with steep precipices and deep waters upon all sides of it. In removing it from a dangerous leaning towards one side there may be a risk of oversetting it on the other." The position of the training college curriculum is not unlike this. The individual must, no less than the university student, enter upon her heritage of culture and knowledge. The young teacher must be reasonably competent in her first year, the future head mistress must be the product, not only of the college course, but all the years in between. The training college curriculum must do justice to these three sometimes conflicting claims. It must also unite them into a single overriding purpose: to put the young teacher in good heart about her work and to convince her that it is worth doing. The present "nice equipoise" in curriculum was only reached about six or seven years ago. The colleges have during this period enjoyed a freedom which is reflected in the individual nature of the curricula they offer, and there is still much to be learnt and much to be improved, without either enlarging or infringing upon that freedom. Security and tranquillity are needed, rather than revolution, but, given these, no one need have fears as to the future of the training colleges.

The Scientific Interests of a Boy in Pre-School Years.

By Two Parents.

The data presented in this paper refer to our son " Jim," an only child, between the ages of two and five. From the time of his birth we have kept a diary record of his development, and for the purpose of throwing light on the growth of a young boy's scientific interests, all the diary entries which unmistakably relate to such interests have been extracted and are given below in chronological order. The following convention for denoting age has been used: thus, 2.6 means 2 years 6 months. The diary extracts have also been numbered to facilitate reference.

When " Jim " was about 3.0, the problem of making a special study of his scientific interests first suggested itself to us. Since that time therefore we have noted as completely as possible his questions and observations of a " scientific " nature. We have tried to abstain from provoking such comments, so that, with the exception of the questions and remarks which are reported as occurring in the course of conversations started by him, they may all be called " spontaneous." In order to get evidence of " spontaneous " interests, we have refrained, for example, from starting conversations by asking him questions; we have deliberately avoided pointing out objects for him to look at.*

On the other hand, as will be seen from the diary extracts, " Jim " has been in an environment likely to provoke scientific interests, a house without a nursery but with a garden; he has paid visits to the Zoo, to Kew Gardens, and to museums. The fact that we were collecting data relating to scientific interests doubtless influenced our attitude when we were dealing with his questions, though in his presence we always tried to avoid showing more than ordinary interest. To help us in maintaining an impartial attitude, we have kept other records simultaneously and in the same diary, for example, of his mathematical interests and of his play interests.† " Jim's " mother, in whose company he has spent the greater part of his time, and who is responsible for the recording, has a degree in arts, followed by one in psychology and education. "Jim's" father has a degree in science, followed by one in education and psychology. There is, therefore, very little likelihood that parental influences have given an undue bias towards science. In point of fact, we have deliberately tried to interest "Jim" in music, poetry, and stories, while maintaining, as far as is possible, a neutral attitude towards his fundamental interests in science and mathematics.

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* This kind of restraint is also valuable from a pedagogical point of view: further, it is an essential if wild creatures are to be watched at close quarters.

† Mathematical interests are, of course, another aspect of the child's general reaction to his environment, and are complementary to the interests described in this paper. Play interests, too, are inextricably mingled with scientific interests; much play, however, is of a more trivial nature than the scientific play described below. Our subject has had, at least from the age of four, a clear distinction in his own mind between activities which are play and those which are work.

We have tried to treat all his questions, including those relating to birth, in the same natural manner, and "Jim" has been, so far as we can tell, equally free to ask questions on all subjects. We do not think, therefore, that there is any reason to suspect that the actual questions asked are only substitutes for any "forbidden" problem which was insistently demanding solution.*

We wish to emphasize the limitations of our data. Owing to the exigencies of busy lives, and to the need for not allowing "Jim" to know that he was the subject of enquiry, many of the records had to be entered up from memory, though the recording was always done as soon as possible after the events occurred. We do not claim, therefore, that the data are complete, but we suggest that they are fairly representative. It will be noticed that in many of the earlier observations, the exact words of the questions and resulting conversations were not always recorded. As the investigation proceeded it became obvious that this was very necessary.†

So far as we have discovered, in no investigation into the development of the special capacities of young children has any precise information been given concerning the general intelligence of the subjects, though such information is obviously of great importance if results are to be collated. The Binet I.Q.'s for "Jim" at ages three, four, and five are as follows:

Age 3. I.Q.—140
Age 4. I.Q.—128 } Average I.Q.—134.
Age 5. I.Q.—135

It is perhaps equally important, especially in an investigation into interests, that some measure or measures of temperament be given, but in the present state of knowledge this is not possible. We can only suggest two problems :

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* See J. C. Flügel, "The Psycho-Analytic Study of the Family," p. 74.

† Our experience suggests a technique of recording somewhat as follows:

(*a*) Entries should be made at least daily, and the subject should not know that he is being written about.

(*b*) The entries should contain as far as possible a verbatim account of the conversations, and also a statement of the place and conditions.

(*c*) No attempt should be made to analyse the data at frequent intervals. Such a practice leads to bias, both in observing and in dealing with the child's questions.

(1) How far do differences in *inborn* temperament, especially the differences between introversion and extroversion, affect the child's balance of interest, in the real objective world on the one hand, and in his phantastic subjective world on the other ?

(2) How far is it possible to produce a well-balanced temperament by giving equal scope to both types of interest, or in special cases of extreme introversion or extroversion, by deliberately encouraging interest in the external world, or in the world of phantasy respectively ?

THE DIARY EXTRACTS.

No. Age.

1. 2.0 *Sitting on a Doorstep.* He noticed the sunset and called attention to it by pointing and saying : "Look." (The sunset was a particularly vivid one, red predominating, and was the subject of newspaper comments next day.)

2. 2.4 *Out for a Walk one evening.* His attention was caught by clouds passing quickly across the moon ; he made no remark but gazed so intently at them as he walked along that he was in danger of falling.

3. 2.5 *At Kew Gardens.* Very interested in swans.

4. 2.7 *Helping to Unpack Flowers.* Delighted with primroses, violets, and "cuckoo" flowers ; helped to arrange them ; showed pleasure on being told their names as each was picked up. Three hours later, of his own accord, he took one of each to a third person and with pride told him their names correctly.

5. 2.7 *On the way to Kew Gardens.* Said frequently and excitedly : "See swans, see swans." *In the Gardens* : Interest extended to storks.

6. 2.7 *In the Garden.* Interested in gardening and in sowing seeds ; was told that the seeds would grow into little plants.

7. 2.7 *In the Natural History Museum, South Kensington.* Very excited at recognizing animals of which he had seen pictures ; especially pleased with *baby* elephant and *baby* kangaroo. Not until a week later did he talk about the animals he had seen in the museum. [2.9 First enquiry expressed in complete question form : "Where tray gone ?" He had previously shown a desire to know the names of things, but no record has been kept.]

8. 2.9 *Washing Hands in the Bathroom.* Asked where the water went from the wash-basin ; showed him the waste pipe and told

him the water went into the pipe. When the basin was very full I said the water was going out of the little holes. He replied: " No, *in* the little holes."

9. 2.9 " Jim " has been looking every day for some time to see if the beans he planted were " up." Although the shoots have now been quite plainly visible for several days he still says they are not up. We therefore called his attention to the little plants. He replied: " Those not beans, those leaves."

10. 2.10 *First Thunderstorm during his Waking Hours.* No fear evinced; very interested; made no remark about the thunder; called the lightning " blue fingers."

11. 2.10 *On Railway Journey.* Great interest in trains, especially in engines; very marked contrast to a journey a year earlier when interest was concentrated on the animals in the fields. (" Jim " has had a toy engine since he was 2.3.)

12. 2.10 Passion for traction engines.

13. 3.2 *At the Table.* " There's black on the bread." I replied: " I think it was cooked rather too much." He appeared surprised and asked: " Do you cook bread? " Questioning revealed that he thought it grew on trees.

14. 3.3 *At the Zoo.* Keenest interest in monkeys; very interested in the bears, which he identified with the Three Bears of the story; flamingoes and goats came next in order of attractiveness; afraid of elephants. Slept badly at night; made noises like the animals. Next morning early he talked excitedly and spontaneously about the animals; the next reference was ten days later.

15. 3.5 *Going to Bed after Dark.* " Where does the blue sky go at night? " Told he could not see it because it was dark.

16. 3.6 *Going to Bed after Dark.* " Where does the blue sky go at night? " Same answer as before.

17. 3.6 *In the Garden.* " Who puts the leaves on the trees? " Told that they grow. *Same day in the house.* I asked him if he were going to plant any beans this year. He replied: " No, I planted some last year and they came up green leaves."

18. 3.6 *At the Table* (referring to the steam from a cup of tea). " Where does the steam go when it goes up? " " Where do you think? " " Into the bathroom." Told it went up to the sky.

19. 3.6 *Going to Bed.* " The sun has coal for its supper." When asked how he knew he said he had seen the coal in a field.

20. 3.6 *At the Zoo.* Interests as before but not afraid of elephants.

21. 3.7 *At the Table.* " What is sugar made of? " Told: carbon, hydrogen, and oxygen.

22. 3.7 *In Kew Gardens.* Very interested in the trees in bloom; asked what each tree was "going to be"; several of them happened to be cherry trees; presently he said: "Oh, I see, all white trees are cherry trees."

23. 3.7 *At Bath Time.* Interested in the pipes in the bathroom; wanted to know where they all went. This interest was renewed every night at bath time for a month. At the end of the first week he wanted to know how the water got out of the water-closet cistern; was very pleased to pull the chain and feel the "little door" opening. In the second week interest spread to hot and cold pipes; he wanted to know where the water went, and what made it hot, starting from the cistern in the loft. Third week, interest spread to waste pipes; wanted to know what the little holes were for in the wash basin; he probably knew this (see 8, 2.9), but the purpose of the question seemed to be to find out where the water went. We crouched under the basin and he discovered what he wanted to know. He always asks now whether pipes are hot or cold and so has discovered gas pipes. Fourth week, he asked where the waste water went from the bath; we traced its course to the large pipe outside the house. He then asked: "How does the water come to the house?" Told it comes in large pipes in the road; four days later he heard us talking about the road being made up and he said: "Then we shall see the big pipes." At the end of the fourth week he pointed out the overflow pipe and the rain water pipe and asked what they were for.

24. 3.7 *Out for a Walk.* "What keeps the sky up?"

25. 3.7 *At Dinner.* "How do we grow?" Told that sunshine, fresh air, sleep, and food made us grow well; seemed satisfied.

26. 3.8 *In the Garden.* Noticed and watched a ladybird open and shut its wings; very excited when one wing was left out. The next day at table he suddenly asked with great difficulty and thought in framing the question: "Is a ladybird when it flies in the air with its wings a dickybird?"

27. 3.8 *At Breakfast.* "Where do we have a cold?" "How do we have a cold?"

28. 3.8 *At Breakfast.* "How does a man make brown bread?" "What does he have for white bread?"

29. 3.8 We were talking about a time before "Jim" was born and I said: "That was before we had you." He asked: "Where was I then?" I replied: "You hadn't come to us then."

30. 3.8 *At Dressing Time.* "Why do bees sting?" (He had been stung by a bee four days previously.)

31. 3.9 *At the Table.* "Jim" asked: "Do bees go to trees?" I answered, "Yes, sometimes," and the conversation continued: "What for?" I asked: "What do they go to the plants for?" to which he replied: "To get their tea from the flowers, to get honey." I asked: "When do they go to the trees then?" and he said: "When the flowers are on the trees." Then, pointing to an apple tree, he continued: "There were some flowers on that tree."

32. 3.10 *In the House.* "Jim" seemed terrified of a daddy-long-legs. I said: "Count his legs." He did so and the fear went and has not been expressed since. After this incident he began to count the legs of people, birds, and animals, and expressed great surprise when he found that birds had two legs.

33. 3.11 *During Heavy Rain.* "I'm wondering when the rain comes on the roof does it go down the chimney pot?" A long discussion followed.

34. 3.11 *At the Table.* "Jim" suddenly began to explain that we were erect and that cows were not, illustrating his meaning by holding his hands first vertically and then horizontally. Asked which horses were, he said: "Like cows," but when hens were propounded he said: "I don't know what shape they are."

35. 4.0 He asked when something happened. I said: "A long time ago." "Before you had me?" "Yes." "Where was I then?" "In the never never land." "I know where that is; I've seen the boys in H——" (referring to models in a clothier's shop.)

36. 4.0 *In the Garden.* "What keeps the moon up?" I said: "The force of gravity," and he continued: "What keeps the stars up?"

37. 4.0 *Going to Bed.* "Don't draw the curtains; I like to see the lovely clouds."

38. 4.1 *Going to Bed.* "Why does it get lighter outside when you put the light out?" Told it looks lighter because it is darker inside; we experimented, turning the light off and on.

39. 4.1 *Watching a Self-filling Fountain Pen being Filled.* "Why doesn't the ink run out when you hold up a fountain pen?" Given a fountain pen filler to play with; amused himself getting water in and out; interest in the original question disappeared.

40. 4.1 *Looking at a Picture of a Steamer.* "Why are the chimneys on boats bent?" Questioned, he said he thought they were like the chimneys in our house, which he knows are sloping (see 33, 3.11). He suggested that the "bent chimney" would stop the rain going down.

41. 4.1 *Washing.* "Why does the soap look smaller in the water?" Later he remarked on the smallness of his hands seen in water.

42. 4.1 *Looking at a Clock.* "Why do the hands on the clock stand out?" He investigated and supplied the reason.

43. 4.1 *Looking at a Clock.* "What makes the wheels go round?" He watched the pendulum swinging and seemed to satisfy himself, but he said nothing.

44. 4.1 *Going to Bed.* He asked many questions about what things were made of, e.g., bottles, walls, paper, cardboard, colours. He was told that colours were made from coal-tar, and he replied scornfully: "How can you get colours from black?"

45. 4.1 *Watching a Self-filling Fountain Pen being Filled.* "How does the ink get into a fountain pen?"

46. 4.2 *Pointing to his Nipples when in his Bath.* "What are they for?" Told: "They are just there; they don't do anything."

47. 4.2 *Choked at Mealtime.* "What did I do that for?" Explanation given of the "two pipes" and their uses; about an hour later in another room he said: "They're side by side, I suppose." "No, one behind the other." Pointing to his nostrils he said: "Oh, I thought these were the ones."

48. 4.2 *Conversation started in Bath.* "Your hand is too hard." I replied: "Your neck is too soft." "No, it's got a bone in it." "How do you know?" "I am made of bone." "Is that all, just bone?" "No, there is skin over the bone, all over." "Are you just skin and bone?" "Yes." Pinching up some flesh, I asked: "What is that?" "Skin." He then went on to say that he was made of sugar and spice and that these were "mixed" in his skin.

49. 4.2 He then continued: "What is sugar made of?" "Carbon, hydrogen, and oxygen. Carbon is black stuff. Do you think that is right? What colour is sugar?" "Black sugar." "No, white sugar is made of carbon. Do you think that is right?" "Yes." "Why do you think it is right?" "Because of those funny words."

50. 4.2 He then asked in succession what the following things were made of: bone, glass, coal, sand, tiles, plaster, trees Trees, he was told, are made of carbon, hydrogen, and oxygen. He listened and said in almost a pitying tone: "Wood." Then he asked: "Anything else?" We suggested leaves, to which he retorted: "No, it grows leaves."

51. 4.2 After watching the working of a clock in a glass case for seven minutes: "I know what makes it tick-tick. This little wheel knocks that little wheel and it says tick-tick."

52. 4.2 Finding a picture of a skeleton, he asked what it was. He was told: "A picture of your bones." He then tried to compare parts of his mother with the skeleton; he called his joints "hinges."

53. 4.4 *Looking at a New Moon.* "Where do they make new moons?" Explanation of new moons given; next day he said the moon was not really new.

54. 4.4 *During a Snowstorm.* "I suppose snow is really rain and they mix cream with it to make it white."

55. 4.4 *Pointing to Hot Toast.* "Why doesn't the butter stay on the top?"

56. 4.5 Went to an exhibition of soap making; very interested but made no remarks. Eleven days later he was very busy mixing soil and water in a tin; he said he was making soap. Five days after that, he arranged some boards so that by rattling them with his feet, he made a good imitation of the noise of the machinery as he had heard it at the exhibition; he said he was making soap.

57. 4.5 *In the Garden* (9 a.m.). "How does the water get up in the sky?" "How does it get down again?" During the explanation, the word "condensing" was used, and "Jim" was reminded how the kitchen walls get wet when puddings are being steamed. At teatime, same day, nothing more having been said on the subject: "When I washed my hands, I did some densing. I put the soap mat into hot water and then I put it in some cold water, and it was all wet. That was densing, wasn't it, mummy?"

58. 4.5 *In the Bath.* "Why does the water spread out flat?" "Why won't it keep up in the middle?"

59. 4.5 *In the Bath.* "What is it?" (pointing to his navel). "Your navel." "What is it?" "There was a cord there once; that is where it joined on." "What was it for?" "When you were very little you were fed that way, but when you could use your mouth the cord wasn't necessary, so it came off."

60. 4.5 *Going to Bed.* "How do they make babies?" "The mummies and daddies make them." "Why?" "Because they want them." "I'm going to buy our next baby."

61. 4.5 *In the Kitchen* watching the fire being made up; quite suddenly and without any apparent reason: "Why do you see the lightning before you hear the thunder?" "Because light travels more quickly than sound." "Oh, I see. But it doesn't stop long." Two minutes later: "Daylight does though."

62. 4.5 *In the Bath.* "Why am I not in two all the way up?" "Where would your dinner go?" "Where does my dinner go?" Long conversation followed on eating, digesting, and excreting.

63. 4.5 *Next Evening.* "Tell me another story about inside me."

64. 4.7 *In the Bathroom.* "How does the water get *up* the pipe?"

65. 4.7 *In the Garden.* The word "petals" occurred in a poem which was being read to him. He was asked what colour they would be. He replied: "Black." He was then shown petals in the garden and he said: "I was thinking of those," pointing to the pedals of his tricycle. After this he was very interested in counting petals of various flowers.

66. 4.7 *In the Bath.* During a conversation about the sea being salt he asked: "How are rivers made? Where do they start?" Explanation given. "Oh, I see, first you build a hill and that saves carrying the water."

67. 4.7 *At the Table.* Very interested in reflections: "Why does the reflection go when you lift the pepper pot off the table?"

68. 4.8 *Playing in the Bathroom.* "If I had some sand and some soda, I could make something." But he could not remember what it was.

69. 4.8 *In the Bath.* Interested in the "push" of the water against his hand.

70. 4.8 *At the Table.* "What makes the sky blue?"

71. 4.8 *At the Table.* "What makes the colours at sunset?" Told we did not know but we would look it up in a book.

72. 4.8 *In the Kitchen watching Petrol being used for Cleaning.* "How do they make petrol?" . . . Some days later he was busy digging in the garden hoping to find oil.

73. 4.8 *Going to Bed.* "I know how they make you. They collect the dead leaves and those make the skin. Then they fill them up . . . (pause) . . . and of course you'll need a pound of those" (pointing to his nails).

74. 4.8 *Playing with a Toy Balloon.* "What keeps it up?" . . . "How high would it go?"

75. 4.8 *Next Day in the Garden.* "Where does the sky end?"

76. 4.9 We asked "Jim" if the beans were up; actually they were all showing, but he said: "No." We asked: "Do you know what they would look like?" He said: "I think it will be a stalk with a little knob on. That will grow to be a big bean." He then went and found the beans were up.

77. 4.9 *Getting out Toys for an expected Baby Visitor.* "I know when I was born. I was about two. I remember the day. Two

men came and talked to you, mummy." (He was probably referring to a visit of insurance agents, who made enquiries as to when he was born.)

78. 4.9 Very interested in a model of an electric motor which unintentionally had been left about in the dining room ; wanted to see it again ; watched "the make and break" ; "Oh, when the fuse goes, the wires don't touch." (He has often watched fuses being repaired.) Later in the day the electric iron needed repairing. He said : "I expect the wires are not touching somewhere."

79. 4.9 He has been very interested in newspaper pictures of the eclipse, and in our conversations about it. In bed : "Who's doing this eclipse ? "

80. 4.9 Very interested in the sewing machine ; likes winding the bobbin ; has learnt from watching me that the little wheel must touch the big one when this is being done ; I went to set the wheel for bobbin winding but found he had done it.

81. 4.9 *Helping to Creosote the Fence.* I said : "I don't think we shall have enough." He suggested : "Put some water in, that will make more." We tried the experiment and he was intensely interested

82. 4.9 For a week "Jim" has been asking questions such as : "Will water go through cloth ? " ; "through wood ? " ; "through soil ? " We told him we must try it and find out, so in response to persistent reminders from him we spent an afternoon experimenting.

83. 4.9 *Coming Downstairs.* "Does the sky go everywhere and all join together ? "

84. 4.9 *Watching Rubbish Burning on the Fire.* "The fire uses the rubbish." "Yes, it burns it up." "Where does it burn it up to ? Does it break it up into little bits and take it up with the smoke ? " "The fire changes it." His attention was called to a piece of apple peel on the fire. "I see, it makes it black like coal."

85. 4.9 *Drinking Water at the Table.* "Why does the glass look different in the water but it doesn't if you just put water in the glass ? The water can't really bend the glass, can it ? " "No, it just makes it look different. You can't be sure that things are always just like they look." . . . Trying to find an example, I said : "When you look in the glass it looks like you but it isn't you." "Ah, but that's different. It doesn't make you look all like this" (hunching himself up).

86. 4.9 *At the Table.* Asked a question by his father, he turned away and addressed his answer to his mother. Then, turning back, he said to his father : "You could hear that." Conversation and

experiments followed; very interested in the fact that you could hear behind you, though, as he suggested, you could not see behind you.

87. 4.10 *At the Seaside on a Windy Day.* "What makes the wind?" "You will learn that when you go to school." "I shall ask that the first day I go."

88. 4.10 *Looking Out to Sea.* "What is there over there?" "If you went far enough you would come to France." "Oh, they have seaside, do they?" "Yes, little French children like holidays." "They don't have any beach." "Why do you think that?" "Because the water is very deep; it gets very deep." "Yes, it gets deep as you go from here, but after a time it gets shallow again." "Oh, I see, when the tide comes up here, it gets low there." "We must find out if you're right about that."

89. 4.10 *At the Imperial Science Museum, South Kensington.* Intensely interested in the working models of engines, and later in points, carriages, and non-working models; noticed the absence of steam whistles in the early models.

90 4.11 *At the Table.* I said: "Last night I was dreaming about that plant" (indicating one in the garden). "Jim" interrupted: "You don't dream about things you've got." I asked: "What do you dream about." He replied: "Things you haven't got; I dream about the museum and things like that."

91. 4.11 *Out for a Walk.* "When will the baby come?" "In November." "I suppose they will just send it up from the shop?" "No, I have really got it now." "Where is it?" "Cuddled up inside me; I am keeping it warm."

92. 4.11 *Eight Days later, Going to Bed.* "Which will the baby be, a boy or a girl?" "I don't know yet." "If you order a boy, won't they send the right thing?" Repeated the information as given before; questions followed on how he "will come out" and where.

93. 4.11 *Watching a Fountain Pen being Filled.* "Why doesn't the ink run out of a fountain pen when you hold it up?" "Do you think it should?" "Yes, there's a little hole." It was suggested he should try with a fountain pen filler. He filled it with water and held it up with the hole down. Finding he had "to squeeze the water out," he seemed satisfied.

94. 4.11 *Playing with Water in a Bowl.* "Why does pressing bring the water up?" "Does it?" "Yes, look." Put his hands in. "Can you press it up more?" "No." "Your hands take up some room in the bowl, room where the water was." "Oh, yes." "What happens to that water when you put your hands in?" "It gets out of the way. Ah, it's like people." "Can it get out of the way downwards?" "No, it must come up."

95. 4.11 *In the Garden.* " How does a spider spin its web ? "

96. 4.11 *In the Garden.* "What happens if a wasp stings a wasp?" "What do you think ? " " I think it would be all right; he'd just have some more sting."

97. 5.0 *Eating Porridge, putting his Spoon into the Milk.* " Why does water go out of the way when anything goes in ? "

98. 5.0 *Out for a Walk.* " What makes a train stop ? "

99. 5.0 *Out for a Walk.* " Why don't trains stop . . . (pause) . . . and start off suddenly express ? "

100. 5.0 *Accidentally Touching a Hot Gas Stove.* Resentfully: " Why did it do that ? "

101. 5.0 *Light switched on while he was in his Bath.* " Your pink cuffs look more yellow now." " Yes, they do in this light." " How do they look in the dark, black, I suppose ? " " Yes." " A pinky black perhaps ? " . . . " But " (pointing to the cuffs) " that is the real colour."

102. 5.0 *In the Garden.* " Spiders don't stick on webs."

103. 5.0 *Pointing to his Toe in the Bath.* " Was I ever as little as that ? " " Yes." " When ? " " Soon after you began to grow." "Was I ever smaller than that ? " " Yes." " Just a little speck, I suppose."

104. 5.0 *Next Day in the Garden.* " Why do worms have eggs ? " He had seen a worm with an egg band three days previously. " To make new little worms." " Ants have eggs. Do they make little ants ? " " Yes." Similar questions followed about spiders and flies. Then : " Do cats have eggs ? " " Yes, but we don't usually call them eggs ; we don't see them." " What do chicken's eggs grow into ? " " Chickens." " Why don't we see the chicken when we eat the egg ? " " It is so tiny, we don't see it." " What is what we eat ? " " Food for the little chicken." A few minutes later he said : " All kinds of things have eggs then."

105. 5.0 *Watching Father Smoking.* " Where does the cigarette go to ? "

106. 5.0 *In the Bath* (pointing to his navel). " What is it ? " " Where you were joined to me."

107. 5.0 *Brought Home a Horse Chestnut.* " What is inside ? " We cut one open : "What is that ? " " The food for the little plant." He was then shown the little root inside.

108. 5.0 *In the Bath.* " How big is the baby now ? " He was shown by placing hands apart. " Why aren't you fat ? " " I think I am." " I don't think so " . . . (pause) . . . " Where will you be when the baby comes out ? " " I shall get into bed." " Then I suppose he just walks off the bed " . . . (pause) . . . " How can the baby grow in skin ? " " What do you mean ? " "How does he get any air ? " " I breathe for him."

109. 5.0 *Foggy Day.* "What makes the sun so red?" "It often looks like that in foggy weather." "I expect they put some red in it."

110. 5.0 *At the Table on the Same Day.* "The sun is a bird, it's got wings." "Why do you say that?" "To get to Australia and back."

111. 5.0 *In the Bathroom.* "When you turn the tap on why does the water come out?" Father was shaving, so did not answer immediately. "Jim" proceeded: "I suppose this comes up and makes a little hole and the water comes out." (He had seen a workman putting a new washer on the tap nine months previously; he often plays with the taps.)

STATISTICAL ANALYSIS.

Though the scientific interests as recorded are most often revealed by questions, this is not always so; sometimes, as in Nos. 51, 54, and 73, the question is not asked aloud and the first indication we have of the interest is the child's sudden remark—his own solution to his private problem. In other cases, the interest is revealed by the child's attitude of concentrated attention (2, 7, 10). Very few of these cases have been recorded, owing to the difficulty of interpreting the real nature of the interest. Analyses of "Jim's" interests are given in Tables I, II, and III. In reckoning the numbers of questions, account has been taken of the "spontaneous" questions only, that is, of questions which *started* a conversation. The other figures were obtained by scoring one point for each recorded interest revealed in other ways than by spontaneous questions.

TABLE I.

Spontaneous Scientific Interests of a Boy in Pre-School Years.

	No. of recorded spontaneous questions.				*No. of other records not questions.*				*Totals.*			
Age	2-3	3-4	4-5	2-5	2-3	3-4	4-5	2-5	2-3	3-4	4-5	2-5
Physics	—	3	17	20	—	—	2	2	—	3	19	22
Astronomy	—	3	8	11	2	2	1	5	2	5	9	16
Animal Life	—	3	3	6	3	3	1	7	3	6	4	13
Self and Babies ..	—	3	6	9	—	—	2	2	—	3	8	11
Physiology	—	—	7	7	—	—	2	2	—	—	9	9
Mechanics	—	—	5	5	1	—	3	4	1	—	8	9
Chemistry	—	1	6	7	—	—	2	2	—	1	8	9
Plant Life	—	1	1	2	2	1	1	4	2	2	2	6
Weather	—	—	4	4	1	—	1	2	1	—	5	6
Cooking	—	2	—	2	—	1	—	1	—	3	—	3
	—	16	57	73	9	7	15	31	9	23	72	104

TABLE II.

PERCENTAGE DISTRIBUTION OF SCIENTIFIC INTERESTS.

(Manufactured Articles and Natural Objects.)

	Questions.						*Other records.*						*Totals.*					
Age.	*Manufactured Articles.*		*Natural Objects.*				*Manufactured Articles.*		*Natural Objects.*				*Manufactured Articles.*		*Natural Objects.*			
	Chemistry.	*Mechanics.*	*Inanimate.*	*Human.*	*Animal.*	*Plant.*	*Chemistry.*	*Mechanics.*	*Inanimate.*	*Human.*	*Animal.*	*Plant.*	*Chemistry.*	*Mechanics.*	*Inanimate.*	*Human.*	*Animal.*	*Plant.*
2-3	—	—	—	—	—	—	—	11	33	—	34	22	—	11	33	—	34	22
3-4	19	—	37	19	19	6	14	—	29	—	43	14	17	—	35	13	26	9
4-5	11	9	50	23	5	2	13	20	27	27	7	7	11	11	46	24	5	3
2-5	12	7	48	22	8	3	10	13	29	13	22	13	12	9	42	19	12	6

TABLE III.

PERCENTAGE DISTRIBUTION OF SCIENTIFIC INTERESTS.

(In Inanimate and Animate Objects.)

	Questions.		*Other records.*		*Totals.*	
Age.	*Inanimate.*	*Animate.*	*Inanimate.*	*Animate.*	*Inanimate.*	*Animate.*
2-3 ..	—	—	44	56	44	56
3-4 ..	56	44	43	57	52	48
4-5 ..	70	30	60	41	68	32
2-5 ..	67	33	52	48	63	37

Perhaps the most striking fact shown in these tables is the strength of " Jim's " interest in inanimate objects as compared with animate. (The term " inanimate " is used in the sense of "inanimate to the adult.") The disparity seems to be increasing, and in his fourth year the number of recorded questions relating to inanimate objects is more than twice the number relating to living things. If, however, we measure "Jim's" interests, not by his questions but by the records of his attitudes and remarks, we find much less disparity in his fourth year ; and in the earlier years the balance of interest is reversed. Reference to the diary shows that although living creatures catch his attention, they present few problems. His interest in plant life is mainly æsthetic ; he is, for example, attracted by the beauty of flowers (4, 22). But there is only one problem: "Who put the leaves on the trees?" (17) and that does not recur. His interest in animals is largely emotional; he seems to feel some kinship with the baby ones (7), he is interested in novel kinds (3, 5, 14, 20), but as early as 2.10 he has transferred his allegiance from animals to trains (11). Animals are alive as he is alive, and are therefore taken for granted until a bee stings him (30). The problem of birth occurs at 3.8 and 4.0 (29, 35), but it does not become urgent until 4.5. It arose then in an acute form because he had been talked to about the possibility of a baby brother or sister (60). Subsequent animal interests seem to be determined almost exclusively by these two problems, the stinging of bees and the origin of babies (96, 103); his main interest in spiders appears to be in them as fly-killers (95, 102).*

The animal which does provoke problems is himself; quite apart from interests in birth, he is curious about the function of those parts of his body which serve no obvious purpose (46, 59, 106), and about those which he cannot see functioning (47, 52, 62).

The outstanding interest, whether measured by the number of questions or by the total number of records, is undoubtedly that in inanimate natural objects. Forty-two per cent. of our records are concerned with physics, astronomy, and the weather. The earliest recorded interests are astronomical (1, 2), and so are the earliest recorded problems (15, 16).

The occasions upon which we have most frequent records of scientific interests are the following: Bath-time, 18 records; meal-time, 17; in the garden, 14; bed-time, 10; out for a walk, 7; in the kitchen, 4.

SOME PSYCHOLOGICAL CONSIDERATIONS AND PEDAGOGICAL SUGGESTIONS.

Except in so far as they are in agreement with well-known facts, the psychological considerations and pedagogical suggestions which follow are of course very tentative. It would be most unwise to draw sweeping conclusions from data concerning one boy, in one environment, with one peculiar set of parents. For example, the fact that "Jim" has been an only child has probably exerted tremendous influence on his scientific interests. Though he has had other children to play with he has been largely in the company of his parents, and, as Piaget* has shown, in adult company a child will ask many more questions of the " why " type than he will when he is in the company of children only. We have no single example of a scientific question asked of other children. Though, when playing with children, many scientific problems occur, they are immediately solved by make-believe. Thus, a railway van is converted into an electric train by hanging a strip of plasticine from a toy signal ; there is no need to consider circuits as when examining an electric motor, or when mending an electric iron in the company of an adult (78).

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* "Jim" was very severely frightened by a dog when he was 1.6. This has possibly affected his attitude towards animals. One obvious defect in "Jim's" environment has been the absence of animal pets.

The recorded questions, though they are only a fraction of the total number of questions asked on all subjects, illustrate the well-known fact that questions relating to place (15, 16, 18, 23, 27, 29) and fact (17, 21, 26, 28, 31, 33) precede those relating to cause (30, 38, 39, 40, ... 111) and time (35). In some of the later factual questions the idea of cause seems to be dawning (24, 25, 36). But this idea is not clearly present in all the questions of the " why " type ; as Stern and Piaget have pointed out, when a child asks " why " it does not necessarily follow that he is asking for causal explanation. For example, the first " why " recorded (30) is predominantly affective in character ; it is more of the nature of an emotional protest than of an intellectual question. Extract No. 100 gives an even clearer example : " Why did it (a hot gas stove) do that ? " ought to be punctuated by a mark of exclamation rather than by one of interrogation. On the other hand, the third and most subsequent " whys " (39, 40, ... 111) seem to indicate a disinterested desire to understand. The second " why " (38) appears to be intermediate between the first and the third, for mixed with " Jim's " desire for intellectual control, there is probably some vague fear connected with the dark. Broadly speaking, we may conclude that real scientific interest has its roots in interests of an emotional and practical nature. In the case studied, emotional (æsthetic) interest was first shown at 2.0, practical interest at 2.9, and genuine scientific interest at 4.1.

Another important characteristic of the data is the large number of " whys " which seem to demand real causal explanation, free from any suspicion of anthropomorphism. Although there is plenty of evidence that " Jim " indulges in the primitive type of explanation, it is clear that when he has a chance of first-hand investigation, he is seeking for " real " causes and can appreciate them. Thus, at 4.2 he investigates the ticking of a clock and gives a causal explanation (51); at 5.0 he explains to himself the working of a tap (111). On the other hand, where such intimate investigation is not possible, animistic explanations are given or demanded. Thus, at 3.6 he says: "The sun has coal for its supper" (19), and as late at 5.0 he explains the sun's movement by saying it is a bird with wings (110), though we suspect that "Jim" is now beginning to make a *playful* use of animistic explanations.

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* J. Piaget, " The Language and Thought of the Child," Chapters I and V.

The hypothesis that the development of the appreciation of causation depends upon facilities for intimate investigation is confirmed by the following experiment. When "Jim" was 5.1, we asked him in the drawing room his own question about the tap (111):

"When you turn the tap on, why does the water come out?" His answer which we accepted was: "There is more pushing." One hour later in the bathroom, I turned the tap on and off, looking at it inquiringly. "Jim" said: "What are you doing that for?"

"I am wondering why the water comes out when I turn the tap on."

He turned the tap on and off, and pointing to it, said: "This goes down into there and stops it." I proceeded: "And when I turn it on?" He continued: "Then it comes up and lets the water out."

We would further suggest that the young child's supposed lack of interest in causation is due to the fact that he is often judged by his answers to questions propounded to him by an adult, and that such questions do not often strike him with real urgency. As Miss von Wyss says: "Unless the children ask the question 'why' . . . they have no special motive for reasoning, and will, therefore, not exert themselves wholeheartedly."* Thus, for example, when we asked "Jim" at 5.1, his own question (40):

"Why are the chimneys on boats bent?" he replied: "Don't know," and showed no further interest. A year earlier when he propounded the problem he was able to provide himself with an answer.

We are now in a position to explain the difference between our results with a boy under five and those of Piaget with a boy of six. Piaget found that his subject asked very few questions demanding causal explanation, and he concluded that a child does not enter the "causal" stage until the age of seven or eight. As confirmatory evidence he quotes "the feeble interest shown in inanimate physical objects," for they provoked only twenty-six questions out of a total of 103 " whys " of causal explanation.* We, on the other hand, find many questions which seem clearly to demand causal explanation, and this fact is confirmed by the very strong interest shown in inanimate physical objects. The explanation lies in the very different conditions under which the questions were provoked. Piaget's data consisted of " spontaneous " questions asked " in the course of daily talks lasting two hours ; each talk was a sort of lesson by conversation, but of a very free character, during which the child was allowed to say anything he liked."† Problems arising during conversations, even of this free character, are not, we suggest, so likely to demand causal explanation as those which arise during activities which bring the child into direct and intimate contact with material things.‡ Our diary extracts show very clearly that activities are much more effective than conversations in provoking problems. For example, of the seventeen " whys " recorded, only one occurs in the course of a conversation. The word " why " is used frequently in conversation, but for the relatively trivial purpose of keeping the conversation going. The following example is typical :

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* C. von Wyss, "The Teaching of Nature Study," p. 35.

" It's raining." " Why ? "

Translated into adult language such a " why " means : " Is it really ? " Any attempt at an answer only provokes another trivial " why," and so the conversation is prolonged until the explainer gets tired.

The examples given in the previous paragraphs suggest at once the futility of much verbal instruction to young children. Even if it is of such a character that children understand the problem, it is unlikely that they will appreciate it.§ Just as there is a great difference between understanding the meaning of the words used in a poem, and appreciating their significance, so it is with problems ; until a child by actual experience and intimate acquaintance appreciates the significance of a problem, he will be content, at best, with an easy animistic explanation, at worst with no explanation at all. It may be argued then that verbal instruction is not merely futile but positively harmful in that it tends to prevent the child from becoming free of magical and other pseudo-causality. The futility of verbalism from another angle is clearly shown in many of the diary extracts. The words used may have a very different meaning for the child from that which they have for the adult (8, 9, 65), or the child may be mesmerised by " funny " words which mean nothing to him (21, 36, 49, 50). Thus he may develop a habit of " shying at " problems ; they are only vaguely apprehended and he is content to allow them to pass without getting any real solution. Instead of giving a verbal answer, it is better where possible to set the child investigating (23, 38, 39, 42, 51, 52, 80, 81, 93, 94, 107, 111). Mrs. Isaacs,* by allowing children to look inside dead animals, has shown that this principle can be carried out in solving problems of physiology such as are given in our extracts Nos. 47 and 62. Many problems, however, cannot be treated experimentally at the age when they occur (36, 41, 49, 50, 53). In such cases two courses of action are open. The question can be turned back on the child, and after he has made his " guess," he is told that we must find out when he is older.† The other plan is to give a verbal answer, or if that is not possible owing to lack of knowledge, to say frankly : " Let us look it up in a book " (70, 71). Where there is very little chance of the verbal explanation having any intelligible meaning it is perhaps better to postpone the problem. But this should be the only reason for putting off a child's question when it is prompted by genuine curiosity ; much harm may be done by shelving or evading questions merely from a sense of false modesty. In any case, it is well not to pretend that a verbal explanation finally settles the question. While it is not desirable to give a child the idea that an adult is withholding information, it is neither necessary nor desirable to give him the idea that an adult is omniscient, or that he is able, even with the help of books, to explain everything. The child must be disillusioned regarding adult omniscience in order that he may grow out of the attitude of infantile dependence ; it is also necessary as one of the first steps in freeing him from an anthropomorphic view of nature.

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* Piaget implies that it is among these questions that we should expect to find " whys " referring to causality in the same sense as ours ; for questions relating to living things are likely to be questions relating to their intentions, and questions relating to machines and manufactured articles most often relate to the intentions of their makers.

† J. Piaget, op. cit., p. 163

‡ A very striking example of the way in which an intelligent boy of 5¾ was able, under favourable conditions, to appreciate mechanical causality is given by Mrs. Isaacs, " The Function of the School for the Young Child," THE FORUM OF EDUCATION, V., 131. The incident occurred while Piaget was visiting the Malting House School in Cambridge, and Mrs. Isaacs relates that he was " very surprised."

§ Our conclusion at this point seems to have a very important bearing on the subject of " verbal " v. " practical " tests of intelligence.

Our diary contains a number of foolish and, in some cases, incorrect answers. It suggests that if school conditions were as they ought to be, the need for studying the art of answering questions would long ago have appeared more urgent to teachers than the need for studying the art of asking them.

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* Susan Isaacs, op. cit., p. 132.

† Miss von Wyss suggests an " Unanswered Questions Book," op. cit., p. 40.

One goal of science teaching is often stated to be the development of a "scientific mind." But in many ways the mind of our young subject (and probably of most young children) is already scientific. The child perhaps errs in being too imperious in demanding reasons; nothing is for him to be explained by mere chance. But is he not nearer to the true scientific spirit than countless adults who use the explanation of "chance" to sweep aside many a real scientific problem?—"It just happens," and they inquire no further. Contrary to the pre-Montessori notion, the child is capable of concentrating on a problem (23, 26, 47, 51). He very readily assimilates the idea of trying to solve problems by experiment (57, 72). Like the scientist, he is an enterprising thinker and does not hesitate to jump to conclusions (22, 88, 94, 104). But in this connection he is handicapped as a scientist by two defects—he does not appreciate the need for verifying his conclusions, and where first-hand experimenting is not possible, he is apt to resort to animistic explanations.* But our data suggest that this latter defect need not persist as long as it usually does. We must ask ourselves whether we do not often artificially delay the child's development by over-stimulating his animistic tendencies, and by starving his equally natural tendencies to investigate reality. The child who described the moon as "a hole in the sky through which God is looking" must have received gratuitous suggestions of an anthropomorphic nature.

Finally, we would suggest, in the light of the data presented in this paper, that the subject usually taught to young children under the name of Nature Study should be carefully reconsidered. If, as too often happens, nature study consists of a rather formal study of plants only, we shall find it necessary to resort to adventitious aids to "make it interesting"; whereas, if properly conceived, it can obviously be a subject which makes a very strong appeal to the natural interests of a young child. If, as seems probable, special capacities are largely determined by experiences in early childhood, schools should, as "ideal epitomes of the world," provide an environment in which the young child can continue adjusting himself to the whole world of nature; such provision is at least as important as provision for developing interests in the various forms of art. Indeed, it is perhaps not too fanciful a picture to imagine

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* It may, of course, be argued that the child-like explanations differ not in kind, but only in degree from the hypotheses framed by scientists; they are both "symbolic notations for what appears to happen."

See "Science and Civilization," edited by Marvin, p. 20; "The Practice of Instruction," edited by Adamson, p. 355.

"infant" schools of the future in which the whole curriculum will be a natural growth from one common root, the child's interest in the natural world. This interest is so intense that it might well provide a very useful driving force for mastering the mechanics of reading and writing* ; it is so many-sided that it might well be used as a growing-point of art as well as of science.†

The problem of how best to nurture the scientific interests of young children is, we would suggest, one whose importance cannot be over-estimated. It seems probable that much disability in science, many unscientific habits of thought, much sexual maladjustment, and much antipathy to real religion, are the direct result of the unwise treatment of the first "scientific" interests displayed by children. If there is any truth in this picture, it is obvious that infant schools need the services of first-class women—kind, patient, and motherly by all means—but women with knowledge and vision, who will apply their ingenuity, not only to the important problem of perfecting the technique for teaching reading and writing, but also, as Mrs. Isaacs says‡ "to the profounder problem of arranging the child's environment so that his fundamental and direct interest in the real world is fostered, and the precious impulses of experiment and discovery are sustained."

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* One very important motive for learning to read and write is undoubtedly the child's desire to be like other people.

† *See also* J. E. Adamson, "The Individual and the Environment," especially the Introduction and Book I.

‡ Op. cit., p. 131

A Statistical and Psychological Investigation of Intelligence Tests.

BY DAVID W. OATES.

1.—*The Object of the Investigation.*

THE object of the investigation described in the following pages was to attempt a critical evaluation of the work of the three intelligence test scales used; to determine which of the test elements comprising the particular tests employed depend most on innate ability and which upon school training and environment; to consider practically the elimination of tests that apparently test the same or similar functions, and ultimately to build up a battery of tests of proved diagnostic value. From the data obtained regarding the inter-correlation of mental functions so far as revealed in the working of these tests, it was also hoped that something might be contributed to the general discussion of the fundamental theories underlying mental tests. The tests used as the starting point of the investigation were those drawn up by Dr. Ballard* :

(1) The Chelsea Test;
(2) The Columbian Test;
(3) The Crichton Test.

The subjects of the investigation were 270 boys attending a secondary school, whose ages ranged from eleven to eighteen years. The Crichton Test, which is devised for older scholars, was not given to boys in the two lowest forms in the school, and the Columbian Test was not used in Form VI, otherwise every boy in the school was tested by means of the three tests. All the tests were administered and marked by the writer in strict accordance with the instructions drawn up by Dr. Ballard, the author of the tests.

TABLE I.

SHOWING DISTRIBUTION OF SCORES BY AGE.

Age.	*Chelsea Test.*		*Columbian Test.*		*Crichton Test.*	
	No.	*Average Score.*	*No.*	*Average Score.*	*No.*	*Average Score.*
11.0—11.11	8	53.2	7	75.6	—	—
12.0—12.11	47	49.1	47	74.8	5	8.8
13.0—13.11	58	56.9	58	78.6	48	13.7
14.0—14.11	53	64.7	56	81.2	51	17.2
15.0—15.11	72	65.5	70	82.1	69	18.3
16.0—16.11	22	73.2	20	86.6	24	25.7
17.0—17.11	8	76.5	2	93.0	9	29.4
18.0—18.11	2	71.5	—	—	2	31.0

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*Group Tests of Intelligence" (1922), Chapters XIII—XV.

2.—*Performance of each Age Group in each Test.*

The ages of the boys tested ranged from eleven years to eighteen years five months : these were grouped both in six months' intervals and in twelve months' intervals ; the detailed tables need not be given here, but are available for reference by any one interested. The results are summarized in Table I, which indicates a considerable agreement in the relative scores in the different age groups in the three tests. The 72 fifteen-year old boys are apparently not as intelligent, relatively, as the other groups, and it is interesting to find this borne out by the three tests.

The norms suggested by Dr. Ballard for the first four age groups* are very much lower than those obtained in this investigation but this might be expected inasmuch as the subjects of this investigation are scholars in a secondary school, all the places in which are filled by open competitive examination ; they are thus a select group drawn from the best section of the boy population in the area in which the school is situated. For purposes of comparison the Columbian Test was administered to the eleven to thirteen years age groups in one of the elementary schools from which pupils attending the secondary school are drawn.

The scores in these three age groups are on the average 14 points higher than those suggested by Ballard—42, 50, and 55 respectively—but are considerably lower than the scores recorded by the boys in the secondary school. The boys in the elementary school are average samples, and although the groups are too small to enable us to base any conclusion upon the results obtained, it is suggested that Ballard's norms are too low. Bell, using the Chelsea Test in Erith County School, with age groups eleven to seventeen years, obtained the following results : 40.9, 57.2, 66.3, 72.2, 77.0, 76.9, 74.4.†

Psychology shares with other biological sciences the peculiar difficulty that arises from the very variable material with which it has to deal. The stability of a norm is a function of the soundness of the sampling, of the number of cases measured, and of the conditions under which the sample is tested. In all test work the variability of mental functions in the same individual from day to day and from hour to hour must be recognized. A subject tested to-day may be on the crest of a wave of ability, and to-morrow, for various reasons, may be in the trough of the wave. "At present, neither the degree of variability to be expected nor the significance of the variability obtained is known."*

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*Ibid., pp. 103, 116.

†" Intelligence Tests," by A. Bell, M.A., B.Sc. *Kent Education Gazette*, February, 1923, p. 221.

The variability of the norms under examination here is probably due mainly to differences in the selection of the samples tested. The results would be more satisfactory if the tests had been repeated. Bradford suggests† "that when the results are based on one examination the position of a candidate is largely dependent on factors other than the ability which is supposed to be tested."

The close agreement between the two tests, which are apparently most appropriate for application to the wide range of age groups forming the subjects of this investigation, is borne out by the correlation coefficients given in Table II.

TABLE II.

CORRELATION‡ OF CHELSEA AND COLUMBIAN TESTS IN AGE GROUPS.

Age.	*No. Tested.*	*Correlation Coeff.*	*P.E.*
16	20	.681	.080
15	70	.813	.002
14	55	.774	.036
13	59	.728	.041
12	46	.596	.064

When we consider the differences in the individual tests comprising the two complete tests as a whole, the uniformly high coefficient of correlation is noteworthy, and indicates that much the same mental qualities or functions are measured by the two tests. It is interesting to compare these correlations with results obtained by workers using other tests. As will be noted most of this work has been done by Americans using American Tests: Otis Scale and Illinois Examination, .64§; Otis-Pressey, .44; Otis-Indiana, .34; Army-Otis, .57; Otis-Thurstone, .46.||

On the whole we may say that the Crichton Test is apparently better suited to the older age groups than to the younger age groups: this was anticipated, and for this reason the eleven year old boys did not work it. Similarly, it was felt that the Columbian Test was a little too easy to differentiate efficiently in the higher age group,

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*E. J. G. Bradford: "Reliability Coefficients." *J. of Experimental Pedagogy*' Vol. V, No. 6, 1920, p. 295.

†Ibid., cf. Weiss. *J. Experimental Pedagogy*, I, No. 4, 1912, p. 329, who believes that at least five tests of scholarship are necessary to establish a student's grade with a sufficient degree of accuracy.

‡Product Moment Formula.

§*Journal of Educ. Psychology*, XIII, 1, p. 43.

||" Educational Administration and Supervision," No. 6, p. 433.

and the eighteen year group did not therefore work it. These points are more clearly seen in the examination of the distribution of the scores in the different tests. Here it is evident from the skew effects in the distribution that the Crichton was too difficult a test to differentiate in the less intelligent section, whereas the Columbian test was too easy to differentiate in the more intelligent section. The Chelsea Test appears to be the most appropriate test for use with boys of the type forming the subjects of this investigation spread out over a fairly wide range of age groups.

3.—*Analysis of the Several Different Tests.*

Two of the group tests we have used, the Chelsea and the Columbian, are composed of separate tests, the former, which we will call A, of four, and the latter, which we will call B, of six, arranged as follows :

(A1) Cipher Test ;
(A2) Meanings of Words ;
(A3) Absurdities ;
(A4) Orientation ;
(B1) Obeying Orders ;
(B2) Mixed Sentences ,
(B3) Analogies ;
(B4) Number Series ;
(B5) Best Reason ;
(B6) Common Sense.

In order to examine any possible differences in diagnostic value in the ten various tests, average marks in each test have been arranged in form groups and in age groups. The forms do not afford a very satisfactory basis for examination as the progression is not continuous, and there is considerable overlapping : A and B forms are parallel in school standing, but the A Form contains the brightest boys selected on the results of school examinations. The R Form consists of a varied assortment of boys ; on the one hand there are some older boys who are unable to take the School Certificate, and are waiting to leave school and enter employment, and on the other hand some younger boys whose promotion to Form V has been deferred—it is difficult, therefore, to place this form in the relative scale. One or two points of interest are brought out by an examination of the distribution of scores.

B5 (Best Reason), B2 (Mixed Sentences), and B1 (Obeying Orders) appear to have least power to discriminate between the several school forms—this is what might be expected when we remember that these groups of scholars are arranged on the basis of school attainments, and these particular tests involve very little of the efficiency developed by school training ; whereas the test which possesses the greatest power to discriminate between successive school forms, A 2 (Meanings of Words), is essentially a test of school training rather than of native ability. Number series is the least successful of the B series of tests in differentiating the school forms.

The distribution of marks in each test in age groups* is of more value. Successive chronological age groups in general exhibit an increase in average ability from year to year. A test which fails to indicate this increase in score in successive age groups is lacking in power of discrimination. More unsatisfactory still is a test in which there is an inversion in the scores, that is where the score decreases in the next higher age group. There are very few inversions in our tables, which indicates that the tests are for the most part appropriate and possess discriminative value over the whole range of age groups. There are serious inversions in Test A4, in the eleven to twelve-year groups, and again in the seventeen to eighteen-year groups. The latter may be due to the very few members in the eighteen-year group, but this cannot apply in the other case. In the three groups, fourteen, fifteen, and sixteen years, the score is practically stationary in Test A4 (Orientation), which appears to be the least satisfactory of the tests. Test A2 again ranks as the most successful of the tests in discriminating between the age groups.

Some indication of the relative value of the tests may be obtained by calculating the average differentiation in score from one age group to the next, which can be regarded as an index of variation, together with the number of inversions in score in the particular test over the range of eight age groups. This gives us the following table :

TABLE III.

	Index of Variation.	*No. of Inversions.*
A2	1.01	1
A1	.97	2
A3	.82	1
B1	.71	0
B2	.61	0
B4	.61	2
B6	.38	1
B3	.29	1
B5	.29	2
A4	. 2	3

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*Full tables are too long to be printed, but are available for reference.

It would seem, therefore, that the discriminative value of A1 (Cipher Test) is marred by its irregularity indicated by the two inversions. The best tests, so far as our examination has proceeded, appear to be: B1 (Obeying Orders), B2 (Mixed Sentences), A2 (Meaning of Words), A3 (Absurdities). A more critical examination may, however, change this order of merit.

4.—*Speed as a Factor in Intelligence.*

In the Chelsea Group Test ten minutes is allowed for A1 (Cipher Test), and there is no time limit for the remaining three tests. It was thought that some interesting results might be obtained by observing any relationship that might exist between rate of working and marks obtained on the test. All boys were instructed to notify the examiner immediately upon completing the tests, and the time for each candidate was carefully recorded. The results are given in Table IV, which indicates the number of candidates completing the test in five-minute periods, and the average number of marks scored by those candidates. No candidate completed the tests in less than thirty minutes and all completed the work in sixty minutes.

TABLE IV.

SHOWING DISTRIBUTION OF MARKS BY TIME IN CHELSEA TEST.

Time.	*Number.*	*Total Marks.*	*Average Mark.*
31—35 minutes	3	215	71.6
36—40 ,, ...	37	2421	65.4
41—45 ,, ...	74	4577	61.85
46—50 ,, ...	69	4421	64.0
51—55 ,, ...	50	3044	60.88
56—60 ,, ...	34	1744	51.3

In spite of the large number of psychologists who have investigated the various phases of intelligence and have inquired into the possible existence of group factors or specific factors, comparatively little attention has been devoted to speed as a factor. The small amount of data brought under review in this section does not warrant our drawing any very definite conclusions on the question; it is interesting, however, to note that the time taken appears to be inversely related to intelligence as measured by this test. The quick worker registers a higher score than the slow worker, or put in another way, the higher the intelligence the greater the speed.

These results agree with the conclusion of Ruch and Koerth* that increasing the time allowance does not permit dull subjects to equal the scores of more intelligent subjects. It is impossible to say without further investigation what would be the effect on the scores of limiting the time on these particular tests, but it appears probable that it would result in increasing the differences between the high score group and the low score group. The most thorough investigation of the speed factor is reported in the doctorate thesis recently published by Dr. Bernstein.† He used tests somewhat similar to the ones used here—sentence completion, directions, concomitants, analogies, moral classification—and the conclusion he reaches is that " the results do not encourage belief in a speed factor."

It is impossible from the data before us to state definitely the relationship existing between speed and accuracy, but an examination of the worked scripts suggests that inaccuracies are evenly distributed over the range of groups. Mudge‡ found that the brightest students tend to be the most accurate, and the dullest the most inaccurate, but that within these extremes " the brighter students tend to be relatively less accurate and the duller students to be relatively more accurate."

Inaccuracy in these tests entails lower scores, and any subject, therefore, who feels that a higher score is more likely to be attained by working rapidly, though carelessly, penalises himself, and the possible relative inaccuracy would not necessarily invalidate the relationship that appears to exist between speed and intelligence. It is probable, as Bernstein suggests, that slowness is due to physical defect, nervousness, difference in interest, conative differences, and deliberation. The subjects of this investigation were working in their own school, and had been in daily contact with the writer for periods varying from two terms to five years. Nervousness as a disturbing factor may, therefore, be considered as reduced to a minimum, and there were no cases of marked physical defect discernible at the time of the investigation, or reported on by the School Medical Officer at the annual medical inspection of the scholars attending the school. Differences of interests and conative

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*" Power v. Speed." *Journal of Educational Psychology*, April, 1923. Cf., " Speed does not alter the effectiveness of an otherwise successful test," S. A. Hamid, " Effective Factors in Mental Tests," *B. J. Psych.*, XIII, 2, p. 103.

†" Quickness and Intelligence : " An Enquiry concerning the existence of a general speed factor, by E. Bernstein. *B. J. Psychology Monograph Supplements.*

‡" Time and Accuracy as related to Mental Tests," by E. L. Mudge. *Journal of Educational Psychology*, March, 1921, p. 161.

differences, whether regarded as related to intelligence or not, are elements in the total make-up of the subjects that, as educationists, we have to take into account. At the present moment, however, we are only concerned with the relationship existing between speed and intelligence, and the data obtained for the purpose of our main investigation appears to warrant the suggestion that the more intelligent subject is also the quicker worker. The causes of slowness is a subject that has not yet been fully examined by psychologists and must await the results of investigation.

5.—*An Examination of Correlations with Subjective and Objective Criteria.*

The validity of a test may be estimated by an examination of its correlations with estimates of intelligence and with the school grading of the subjects working the tests. The correlation coefficients in forms are shown in Table V. The two masters who had the best knowledge of the boys in each form prepared independent rank estimates for intelligence. The coefficients of reliability of the two estimates were: .69, .70, .83, .48, .69, .67, .77, .26, .72, .85 respectively in the different forms; with two exceptions they are uniformly high. The two separate estimates were then pooled, equal weight being given to each, and correlation coefficients for each intelligence test with the composite estimate were then calculated. The school terminal examination provided the data for calculating the correlation coefficients in the remainder of the table.

TABLE V.

Form.	*No. of Boys.*	*Correlation with Teachers' Estimates of Intelligence.*			*Correlation with School Examinations.*		
		Chelsea.	*Columbian.*	*Crichton.*	*Chelsea.*	*Columbian.*	*Crichton.*
IIB ..	28	.325	.343	—	.298	.298	—
IIA ..	30	.618	.643	—	.291	.476	—
IIIB ..	29	.229	.187	.243	.288	.497	.383
IIIA ..	30	.268	.267	.032	.179	−.102	.322
IVB ..	26	.313	−.129	−.320	−.025	.002	.107
IVA ..	30	.485	.713	.534	.517	.309	.623
R	28	.487	.469	.421	.578	.539	.612
VB ..	28	.411	.309	.018	.172	.172	.305
VA ..	29	.480	.524	.575	.485	.527	.662
VI....	8	.205	—	.739	.356	—	.584

On the whole the Chelsea and Columbian Tests correlate more highly with teachers' estimates of intelligence than with school examinations, but in the Crichton Test the reverse is true. There is considerable variation in the size of the correlation coefficients in the different forms. In the correlations with estimated intelligence the coefficients for the Chelsea Test vary from .205 to .618, for Columbian from −.129 to .713, and for the Crichton from −.320 to .739. In the correlations with school examinations the coefficients for the Chelsea Test vary from −.025 to .578, for the Columbian Test, from −.102 to .539, and for the Crichton Test from .107 to .662. The Chelsea Test, therefore, yields the steadiest results when compared with estimated intelligence, and the Crichton Test when compared with school examinations.

This inconsistency of results when using the same tests with different groups is a feature that has been noted by other investigators. For example, note the differences in the intercorrelations obtained by Burt* when using the same tests with groups of boys from an elementary school and from a preparatory school, and this variability has reappeared in later investigations. The variations are due to two main causes. The small size of the groups involved introduces a large sampling error due to chance and consequently wide fluctuations. Further, the variations in the homogeneity of the groups materially influence the correlations. Where correlations are obtained from school classes, particularly where these classes are forms in a secondary school, the factor of selection must play an important part. The constitution and size of the groups in this investigation differed, and it is probable that the size of the coefficient of correlation obtained is, therefore, a function of the particular group in question. It is worthy of note that in the cases of parallel forms, A and B, in ten out of the eleven cases teachers' estimates yield a higher coefficient of correlation with intelligence in the superior form than they do in the poorer form, which suggests that there is some constant factor operating in these cases. Differentiation is apparently easier in a group of superior ability, but with individuals more nearly approximating the median for the normal distribution of ability, such as the boys composing the B Forms, who differ from one another by small amounts, it is decidedly more difficult to differentiate, and our criteria for evaluating tests here require the utmost refinement.

The significance of comparisons of correlation coefficients obtained from different groups may be regarded as of only doubtful value unless the degree of heterogeneity is measured in some way and

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*"Experimental Tests of General Intelligence." *British Journal of Psychology*, III, p. 177.

indicated. This fact cannot affect our results here to any marked degree, seeing that they are all specially selected groups, and therefore of approximately equal homogeneity. The most heterogeneous group here is the R Form, constituted of boys of differing age and ability, as has been indicated, and the coefficients for this group, as we should expect, are uniformly high. The uniformly low coefficients obtained in Form IVB are surprising, and no satisfactory explanation can be discovered. They are regarded by the staff as a relatively poor lot of boys, uniform in their low standard of work, but reference to the tables shows that the average mark obtained in these two intelligence tests was quite satisfactory—63.5 and 81.9. It seems probable, therefore, that they are deficient in those factors other than native intelligence which determine success in school, and this may in some measure account for the lack of agreement of their intelligence rating with school examinations and also with teachers' estimates of intelligence, which, as I have shown elsewhere,* are largely influenced by success in school examinations.

We may deduce from this section of our enquiry the suggestion that the Crichton Test appears to be more closely related to school efficiency than to intelligence as estimated by teachers, and that as a measure of intelligence it has greater value for groups of older boys than for younger boys, possibly because they have had a longer period of school training, or because it is a better measure of the abilities which have most significance at the age of the boys forming these school groups. The Chelsea and Columbian Tests are more closely related to intelligence as estimated by teachers than to success in school examinations, and these two tests appear to be satisfactory measures of the intelligence of the boys forming the ten school groups under investigation. There is also the suggestion that much greater care is necessary in refining tests to be used for discriminating between the relative intelligence of boys of average ability than in devising tests for selection of the brightest boys.

6.—*An Examination of the Inter-Correlations of the Tests for Common and Specific Factors.*

Any complete investigation of intelligence tests would involve the necessity of endeavouring to determine the relative number of mental abilities brought into play in working the tests, and the nature and efficiency of the organization of these abilities. It may be assumed that there is no predominating ability, and, however closely they may fuse, every separate ability retains a portion of its individuality or functions independently. The greater the number, up to a certain point, of separate abilities, therefore, we endeavour to measure the truer and more reliable is our diagnosis likely to be. Our ideal should be to measure every element that contributes to intelligence, otherwise we might select in our battery of tests those elements which measure the functioning of just those mental traits or abilities in which for some attributable or accidental reason a particular pupil may have been particularly strong or particularly weak. Or, on the other hand, we might endeavour to determine which of the separate test elements measure the more differentiating abilities and make our selection of suitable elements for our complete test accordingly. We can estimate what a particular test measures only by our examination of its correlations ; for this reason it will be necessary to work out all the inter-correlations of the tests under investigation. It will be realized that great caution is necessary in interpreting correlation coefficients, for the evidence they afford is presumptive rather than conclusive, and they must be understood as indicating probabilities rather than certainties.

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*"The Nature and Validity of Subjective Estimates of Intelligence." FORUM OF EDUCATION, II, 1924. Pp. 103-121.

The inter-correlations of the ten tests have been worked out in Table A, which we can examine with a view to tracing the presence of some common fundamental function, which saturates, in different degrees, the activities involved in the different tests. It can easily be demonstrated that if all the correlations are due solely to the functioning of one common factor, then the correlation coefficients will be arranged in hierarchical order.* A perfect hierarchical order cannot be expected in an experimental research, but there is apparently only a rough approximation to hierarchical order in our table.

The question then arises whether there is one common factor operating in all the tests, or whether there are several common factors each operating in a small group of the tests. It is possible to reconstruct a table of theoretical coefficients, calculated on the assumption that all the correlations are due to one factor, and one only, common to all the tests but functioning in different degrees in the different tests. The theoretical coefficients are given in Table B, which shows the theoretical values which have been calculated so as to give the best possible fit to the observed values obtained in this investigation.

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*For mathematical proof see " Essentials of Mental Measurement," by Brown and Thompson, p. 165.

A.—OBSERVED COEFFICIENTS.

		A3.	B6.	A1.	B4.	B1.	A2.	B2.	A4.	B5.	B3.
Absurdities	(A3)	—	.507	.595	.365	.396	.599	.335	.413	.387	.072
Common Sense	(B6)	.507	—	.505	.393	.589	.327	.176	.274	.085	.086
Cipher	(A1)	.595	.505	—	.485	.433	.236	.325	.607	—.045	—.231
Number Series	(B4)	.365	.393	.485	—	.388	.162	.253	.287	.173	.396
Obeying Orders	(B1)	.396	.589	.433	.388	—	.448	.154	.205	.264	—.030
Meanings of Words	(A2)	.599	.327	.236	.162	.448	—	.090	.108	.160	.285
Mixed Sentences	(B2)	.335	.176	.325	.253	.154	.090	—	.140	.417	.149
Orientation	(A4)	.413	.274	.607	.287	.205	.108	.140	—	—.091	—.092
Best Reason	(B5)	.387	.085	—.045	.173	.264	.160	.417	.091	—	.266
Analogies	(B3)	.072	.086	—.231	.396	—.030	.285	.149	—.092	.266	—
Average		.408	.326	.323	.322	.316	.268	.226	.206	.179	.1001
Hypothetical General Factor		.813	.638	.632	.630	.617	.530	.434	.394	.341	.187

B.—Theoretical Values.

		A3.	B6.	A1.	B4.	B1.	A2.	B2.	A4.	B5.	B3.
Absurdities	(A3)	—	.519	.514	.512	.502	.431	.353	.320	.277	.152
Common Sense	(B6)	.519	—	.403	.402	.394	.338	.277	.251	.218	.119
Cipher	(A1)	.514	.403	—	.398	.390	.335	.274	.249	.216	.118
Number Series	(B4)	.512	.402	.398	—	.389	.334	.273	.248	.215	.118
Obeying Orders	(B1)	.502	.394	.390	.389	—	.327	.268	.243	.210	.115
Meanings of Words	(A2)	.431	.338	.335	.334	.327	—	.230	.209	.181	.099
Mixed Sentences	(B2)	.353	.277	.274	.273	.268	.230	—	.171	.148	.081
Orientation	(A4)	.320	.251	.249	.248	.243	.209	.171	—	.134	.074
Best Reason	(B5)	.277	.218	.216	.215	.210	.181	.148	.134	—	.064
Analogies	(B3)	.152	.119	.118	.118	.115	.099	.081	.074	.064	—

C.—Specific Correlations.

	A3.	B6.	A1.	B4.	B1.	A2.	B2.	A4.	B5.	B3.
Absurdities (A3)	—	—.026	.18	—.325	—.231	.34	—.034	.173	.201	—.014
Common Sense (B6)	—.026	—	.171	—.015	.321	—.017	—.146	.032	—.183	—.044
Cipher (A1)	.18	.171	—	.144	.067	—.15	.076	.506	—.356	—.462
Number Series (B4)	—.325	—.015	.144	—	—.001	—.26	—.257	.057	—.056	.366
Obeying Orders (B1)	—.231	.321	.067	—.001	—	.181	—.156	—.049	.074	—.109
Meanings of Words (A2)	.34	—.017	—.15	—.26	.181	—	—.184	—.128	—.026	.224
Mixed Sentences (B2)	—.034	—.146	.076	—.257	—.156	—.184	—	—.035	.318	.077
Orientation (A4)	.173	.032	.506	.057	—.049	—.128	—.035	—	—.248	—.183
Best Reason (B5)	.201	—.183	—.356	—.056	.074	—.026	.318	—.248	—	—.221
Analogies (B3)	—.014	—.044	—.462	.366	—.109	.224	.077	—.183	.221	—

A comparison of the two tables shows that there is considerable departure from the hierarchical order we should expect to find if the correlations were due solely to a common factor, and we may assume that in addition to a common factor there are other group factors or specific factors present in the tests. The correlations of each test with the hypothetical general factor have been calculated* and are given in the last line of Table A. It is impossible to determine the nature of the common factor which may be present, and these coefficients merely indicate the relative tendency for each particular test to be identified with the common factor.

The most marked departure from the theoretical coefficients in the observed coefficients is found in the inter-correlations between Cipher and Analogies, Orientation and Best Reason, and between Number Series and Analogies, Mixed Sentences and Best Reason. In those cases where the observed coefficient is higher than the theoretical coefficient it is possible that there are special factors operating in addition to the factor common to all the tests.

We many carry this analysis of the data for the presence of special factors a step further. If we can eliminate the influence of the hypothetical common factor the correlation coefficients then remaining will indicate special factors existing in the inter-correlation of the tests. The influence of the hypothetical common factor can be eliminated by the usual multiple correlation method,† using the observed coefficients in Table A, and calculating the correlation existing for hypothetical common factor constant. These specific correlations are given in Table C.

Another method of investigating to what extent the different tests within each group of tests manifest the operation of a general factor is an examination of the tetrad differences. The Columbian group of six tests is the most suitable for this purpose, and to the table of coefficients obtained Professor Spearman's recently published " tetrad difference " criterion‡ has been applied with the following result :

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*See Burt, " The Distribution and Relations of Educational Abilities," p. 53, for mathematical argument.

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$$r_{12\cdot 3} = \frac{r_{12} - r_{13} \cdot r_{23}}{(1-r_{13}^2)^{\frac{1}{2}}(1-r_{23}^2)^{\frac{1}{2}}}$$

‡The formula used was :

$$PE = \frac{1.349}{N^{\frac{1}{2}}} [r^2 (1-r)^2 + (1-R) s^2]^{\frac{1}{2}}$$

$$\text{Where } R = 3r \frac{n-4}{n-2} - 2r^2 \frac{2-6}{n-2}$$

—Appendix XI, " The Abilities of Man," C. Spearman, 1927.

DISTRIBUTION OF PROBABLE ERRORS OF TETRAD DIFFERENCES.

+5 +4	+4 +3	+3 +2	+2 +1	+1 0	0 −1	−1 −2	−2 −3	−3 −4	−4 −5
1	0	5	5	10	10	7	3	2	2

Between.	±*PE.*	±2 *PE.*	±3 *PE.*	±4 *PE.*	±5 *PE.*
Normal	50.0%	82.3%	95.7%	99.3%	99.9%
Distribution Here ..	44.4%	71.1%	88.8%	93.3%	100.0%

The figures are not in full agreement with the requirements of the theory as indicated by the figures for a normal distribution, and we should not be fully justified, therefore, in claiming that the abilities involved in working the test can be separated into a general factor and specific factors which are independent both of the general factor and of each other. There is clearly a general factor operative, but there also appears to be a factor or factors other than the general factor at work, or in other words, there is overlap.

This failure to satisfy the requirements of the "two-factor" theory as completely as one would expect may be due to the disturbance caused by spurious correlation.* Influences of diversity of age, training or sex cannot be the cause, as the subjects were all boys of the same age group in the same school, and therefore a more or less homogeneous group subject to the same training influences. Nor can weaknesses in the administration of the tests such as result, for example, "when any mental operations are measured only for speed, regardless of quality," be urged as an explanation. In our effort to explain satisfactorily the unexpected discrepancies it was an advantage to have before us a table of specific correlations calculated by approved statistical methods. From this table we obtain the following:

Tests.	*Actual Observed Correlations.*	*Calculated Specific Correlation.*
(1) B1 B6	.589	.321
(2) B2 B5	.417	.318
(3) B3 B4	.396	.366
(4) B3 B5	.266	.221
(5) B1 B5	.264	.074
(6) B1 B4	.388	−.001
(7) B4 B6	.393	−.015
(8) B2 B4	.253	−.257

**See* Spearman. Ibid., p. 155.

In the table giving the distribution of tetrad differences there are three cases ±4 P.E. and two cases ±3 P.E.: on investigation it was found that these five cases arise from tetrads in which two out of the first three correlation coefficients in the above list enter as a pair. Further, in each of the nine cases ±2 P.E. one of the first three coefficients in the above list enters as a member of the pair causing the high tetrad difference, and in four cases this coefficient is in combination with No. 4 above. It appears, therefore, that the apparent failure to satisfy completely the requirements of the theory is due to the correlation coefficients of tests which have proved high specific correlation. In other words, it is due to the presence of group factors, or "overlap" in the specific factors involved.

It is clear from an inspection of Table C that the factors involved in the tests are not mutually independent. Analogies is highly correlated with Number Series, Best Reason, and Meaning of Words, and Best Reason in turn is highly correlated with Mixed Sentences, which itself has a small but positive correlation with Analogies. There appears to be something in the nature of a specific reasoning factor functioning in these tests. The specific correlation may possibly be due to the group factor which Spearman has termed logical ability.* The tests in question involve the trying of various combinations under the influence of a directing idea; in other words "it is the organizing activity of mind that is essential in all these tests."† The Cipher and Orientation Tests have the highest correlation: they both call for close attention and may also involve a specific memory factor. The high correlation between the Obeying Orders Test and the Common Sense Test, which involve similar operations, is probably due to a specific factor which might be termed practical common sense.

On the basis of the specific factors which may be traced we can proceed to determine which combination of the different tests will probably make the most satisfactory testing scale. Both negative and positive correlations are significant for our analysis. Where there is undoubted positive specific correlation existing between two tests we may assume that they are both probably testing the same special abilities in addition to the common factor of intelligence, and they should not, therefore, be both included in the same limited scale of tests, as they will give undue advantage to the subjects possessing this special ability. If we examine this table for highest positive specific correlations, we can deduce the following conclusion regarding the inclusion or non-inclusion of a particular test :

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*Ibid., p. 241.

†V. Hazlitt, "Ability," 1926, p. 9.

If Cipher (4) then not Orientation (8) ;
,, Number Series (1) ,, ,, Analogies (5) ;
,, Absurdities (2) ,, ,, Meanings of Words (10) ;
,, Common Sense (6) ,, ,, Obeying Orders (9) ;
,, Best Reason (3) ,, ,, Mixed Sentences (1).

We can apply the same method to the negative specific correlations. It may be assumed that where there is marked negative specific correlation between two tests they are probably testing different special abilities in addition to the common factor of intelligence, and both tests should, therefore, be included in a full testing scale. An examination of the table leads to the following conclusion :

If Cipher (4) is included then also Analogies (5) and Best Reasons (3) ;
,, Absurdities (2) ,, ,, Number Series (1) ;
,, Best Reason (3) ,, ,, Orientation (8) ;
,, Number Series (1) ,, ,, Meanings of Words (10).

There is remarkable agreement in the selection of tests by both these methods. If, as a result of the positive specific correlation we select Cipher (4), Number Series (1), Absurdities (2), Common Sense (6), and Best Reason (3), how far is our decision supported by the negative specific correlations ? There is absolute agreement on four out of the five tests, with the suggestion that it should be Analogies (5) or Common Sense (6) or both. We may conclude, therefore, that the best combination of tests would be :

(1) Number Series ;
(2) Absurdities ;
(3) Best Reason ;
(4) Cipher ;
(5) Analogies ;
(6) Common Sense.

It is interesting to compare the results obtained in the only other investigation of inter-correlations of tests reported in this country. Bowie* investigating the American Army Tests obtained the following inter-correlations between the separate test elements which might be compared with the tests we are here investigating.

***B. I. Psychology*, XIII. April, 1923, p. 395.

	No.	V.	VII.	III.	VI.	I.
Disarranged Sentences	V	—	.54	.50	.43	.21
Analogies	VII	.54	—	.49	.41	.41
Judgment	III	.50	.49	—	.42	.23
Number Series	VI	.43	.41	.42	—	.31
Instructions	I	.21	.28	.23	.31	—

Analogies and Number Series are exactly the same type as our B3 and B4 tests. Disarranged sentences is very similar to our B2 (Mixed Sentences) Tests. Instructions is similar in type to our B1 (Obeying Orders) Test, while Judgment might be set beside out B5 (Best Reason) Test. Bowie finds higher correlations between Disarranged Sentences and Analogies than our results show. Both tests are literary and we might expect some agreement between them ; the marked difference in the coefficient of correlation obtained in the two investigations is probably due to differences in the construction of the tests, or it may be partly the accidental result of differences in the groups tested. His coefficients are on the whole a little higher than ours, but there is a general agreement in tendencies. He confirms our low correlation of Instructions (Obeying Orders B1) with the other tests, and finds, as we do, that it is most closely related to Number Series Test.

7.—*A New Criterion for the Selection of Intelligence Tests.*

Criticism has recently been urged against the criteria frequently used for the establishment of the validity of intelligence tests. The most helpful suggestion that has been forthcoming is the new criterion introduced by Professor Chapman.* The two criteria which have been most frequently used in the past are, he maintains, the increase in achievement from age group to age group and the variations within each age group. "The first criterion obviously provides no safeguard against the training factor, and the second not as much as might be desired. In thus establishing the validity of the test elements we have been guilty of loading the dice in our favour, we have made our task too easy." Professor Chapman therefore, proposes his new criterion in order to load the dice in the opposite direction.

The two factors which operate in producing higher scores in the higher age groups are increase of intelligence and longer exposure

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*"An Additional Criterion for the Selection of the Elements of Mental Tests," by J. Crosby Chapman. *Journal Educational Psychology*, XII, 1921, pp. 232-4.

to training, the second of which is an obstacle in our effort to determine the reliability of the different tests as measures of intelligence. Both of these factors operate in the same direction. Can we set up a criterion in which they work in opposite directions? We can compare the scores of chronologically young but mentally bright children with those of chronologically old but mentally dull children.

A group of sixteen boys twelve years of age was found who made the same total scores in the ten tests under investigation, boy for boy, as a group of sixteen boys fifteen years of age, thus it was possible to arrange a bright young and a dull old group as in Winch's method of parallel groups. As a result we are in a position to investigate the extent to which individuals in the two groups secured their totals on the same individual tests, and in which of the different tests they differed most widely. The ratio $\frac{\text{Bright Young}}{\text{Dull Old}}$ for each of the ten tests should indicate the relative value of each test as a test of intelligence apart from environmental and training factors. The calculated ratios are given in the table below :

No.	*Test.*	*Ratio* $\frac{BY}{DO}$
1	(A1) Cipher	1.013
2	(A2) Meanings of Words ..	.914
3	(A3) Absurdities	1.081
4	(A4) Orientation	.934
5	(B1) Obeying Orders	.918
6	(B2) Mixed Sentences	.970
7	(B3) Analogies	1.006
8	(B4) Number Series	1.113
9	(B5) Best Reason	1.036
10	(B6) Common Sense	1.0

Meanings of Words and Mixed Sentences are tests we should expect were most likely to be influenced by school training and are to that extent less reliable measures of intelligence, and this would apply, to a less degree, to Obeying Orders. Orientation, again, appears to be a test of doubtful value. The most satisfactory tests judged by this criterion appear to be :

(1) Number Series ;
(2) Absurdities ;
(3) Best Reason ;
(4) Cipher ;
(5) Analogies ;
(6) Common Sense.

This result agrees absolutely with the conclusion arrived at as a result of our examination of the inter-correlations of the tests and confirms our decision that out of the ten tests under investigation these tests should be included in a complete testing scale.

It is interesting to review at this point the results obtained by Dobson* who compared the scores obtained in five different tests of fifty-eight pairs of school boys, chronological ages eleven to fourteen, and university training college men chronological ages eighteen to twenty-four, the boys' scores being above the average of their age groups, and the men's scores below the average of their age groups. The method does not yield as definite results as that applied here, where all the pupils in each of the compared groups are of the same chronological age, his subjects being spread over four years and seven years respectively; but it seems to indicate the tendency of the different tests to measure somewhat different abilities at different ages. The data he presents would place the tests he uses in the following order:

(1) Analogies;
(2) Synonyms and Opposites;
(3) Mixed Sentences;
(4) Completions;
(5) Reasoning Tests.

The tests he uses are not parallel with those under consideration here, the only identical test is Analogies, and it is interesting to note that his data confirms our conclusion. The younger pupils obtained twice as many marks as the older subjects in Test II (Analogies), but only about three-quarters as many in Test V (Reasoning), from which Dobson concludes that it "is possible that Test II measures innate ability and that Test V measures the effect of School environment, teaching, and experience."

8.—*Conclusions.*

One point that opens a question of fundamental importance arises from the last section of the investigation. It is clear that the order of difficulty of the tests is different for different ages. When Binet set out to determine "levels" of mental activity his work was based on the assumption that intelligence changes with increasing maturity, that is, that it might become something different as well as something more. A group of tests does not necessarily

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*"An Investigation of Group Intelligence Tests," by R. R. Dobson. *British Journal of Psychology*, XV, 2. October, 1924, pp. 162-168.

measure a single mental function, but as we have seen, several related or relatively independent abilities or functions. These functions develop more or less independently, and the inter-relation of one to another is not constant in the different age groups, that is to say, the relative usefulness of the different forms of mental activity probably varies with age. The differences in the relative difficulty of the tests for subjects of different ages which our results reveal are possibly due to the more rapid development at a particular age level of some functions as compared with others. It is also possible that one and the same test does not bring into play precisely the same kind of mental activity at widely differing stages of mental maturity. Thus a test may have high diagnostic value at one end of the age scale, and little or no diagnostic value at the other end of the age scale. It is open to question, therefore, how far the total score on a battery of tests applied to several different age groups in which there are widely different scores in the different tests in the different age groups can be regarded as a valid measure of the relative standard of intelligence.

This suggests the value of the mental profile as a satisfactory method of registering the results of a selected group of tests, but the profile is difficult to interpret, and does not lend itself to the practical uses of classification and grading that the schools need. Another useful possibility is that the scores should be given in the form of an equation, as has been suggested by Drever* in his criticism of the Yerkes Point Scale, where there is a separate report for each test as follows :

$X=17/20+15/21+18/22+16/19=66/82$, the denominator in each case denoting the norm for the particular group to which the individual tested belongs. Though probably more valid scientifically than the total score in the group of tests, this method is open to the same practical objections from the point of view of the school.

The basic principle underlying objections to the total score as an index of intelligence may be summed up by saying that the assignment of equal weight to each test in the group of tests at all points in the age scale is psychologically unsound. To some extent this is true, and for scientific accuracy we should perhaps experimentally determine the relative difficulty of the several tests, weight the tests accordingly, and retest. This would enable us to mark each individual in proportion to the difficulty which the particular age group found in dealing with the particular test. The standards would vary from school to school, and from one group of a particular age to another of the same age, and would present sufficient difficulties to make the method quite useless for practical purposes.

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*" An Introduction to the Psychology of Education," by James Drever, 1922, p. 157.

Again it may be urged that it would be a better course to design a group of tests solely for children of each specified age group, using in each age group those particular tests of proved diagnostic value for that particular age group. The tests for inclusion would have to be selected by investigation of the mean attainment of subjects of the particular age, but it is obvious that when the particular tests selected to form the group of tests for the specified age group were applied, equally serious difficulties would arise. In the first place all children falling within the chronological age group of eleven years, for example, would not be at identical stages of mental maturity, and while the tests were of proved suitability for median children, they would be considerably less suitable for children within the chronological age group at the extremes of our distribution for mental maturity. The conclusion of another investigator that " changes in the development of mental functions from year to year are very small, compared with the great individual differences found between children comprising the same age group "* supports our contention.

It is clear that if the test material is to be graded in any way it must be after the difference in capacity at the various ages has been experimentally determined, for only then can the externally graded test have any scientific value. But even after prolonged experimental investigation of differences in capacity, difficulties are not removed.

Further, even a scale designed in this way solely for children of some specified chronological age group, assuming that intelligence, that is mental maturity, is normally distributed within the chronological age group, will involve the measurement of abilities which will vary to some degree in development, complexity, and value as components of intelligence, and would, therefore, need to be weighted in proportion to their proved significance as measures of intelligence.

We may conclude, therefore, that the group of tests selected as a result of this investigation constitutes a valid practical measuring scale for the whole of the age groups involved in the investigation, that while some of the tests favour the lower chronological age groups, inasmuch as they involve those functions that develop at that age more rapidly compared with other functions, other tests selected are more favourable to the later chronological age groups,

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***British Journal of Psychology*, IX, 1, p. 71.

and the total score may be accepted for all practical purposes as a valid measure of intelligence.

Our conclusion here in the tests before us supports Bickersteth's conclusion that "in diagnosing mental ability the same test applied at different ages has greater value than a series of what Mr. Burt has termed "externally graded tests."* In an investigation upon "The Measurement of Intelligence by the Binet Tests" Professor Burt came to the conclusion that "for all exact and scientific purposes, the principle of external gradation, that is of constructing a scale out of a long list of heterogeneous tests in order of their relative difficulty, will have to be given up . . .† Each test should be made to provide its own scale . . . A simple test of some higher mental process will usually give after two applications only correlations of about .7: a combination of several such internally graded tests will give a more satisfactory order still."‡ Professor Burt writes§: "I came to the conclusion, which I have since always strongly urged, that for older and brighter children group tests, which are usually internally graded, are by far the more effective. I am, therefore, entirely in agreement with the main conclusion in this investigation." Whether it will ever be possible to frame a group of tests, practical in their application as diagnostic instruments for school purposes, that will satisfy all the exacting requirements of scientific measurement, is open to question. It can, however, at least be claimed that the group of tests we have investigated not only provides a valid instrument for the purposes in view, but also has considerable value from the theoretical point of view.

SUMMARY OF CONCLUSIONS.

(1) There is considerable agreement in the results of the three scales. The Chelsea Test appears to be the most appropriate for use with subjects spread over a wide range of age groups.

(2) (*a*) The Columbian and Chelsea Tests correlate more highly with teachers' estimates of intelligence than with school examinations. The Crichton Test is more closely related to school efficiency, and has greater value for older subjects.

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*"Mental Tests for Children of Various Ages," by M. E. Bickersteth. *British J. of Psychology*, IX, 1, p. 70.

†I mean for older and brighter children. For rough practical measurements with the young and defective the Binet Scale is as good as anything we possess at present —C.B.

‡*The Eugenics Review.* VI. April and July, 1914. Pp. 149—150.

§In a letter. I wish to express my gratitude to Professor Burt for his very valuable comments upon the results of this investigation.

(*b*) Meanings of Words and Number Series Tests discriminate best between school forms,, and are most closely related to school attainments. Obeying Orders, Mixed Sentences, and Absurdities have greater power of discrimination between age groups.

(*c*) Teachers find it easier to differentiate between individuals of superior ability than between individuals nearer the normal in ability. Greater care is necessary in refining tests to be used for discriminating between boys of average ability than for the selection of the brightest boys.

(3) (*a*) The failure of the data to satisfy fully the requirements of the tetrad difference criterion is proved to be due to overlap shown by the table of specific correlations.

(*b*) The table of specific factors calculated by eliminating the effect of the common factor is interesting, and throws some light upon the nature of the ability measured.

(*c*) There is some evidence of the following group factors—a reasoning factor, a memory factor, and something in the nature of a practical common-sense factor.

(*d*) There is no definite evidence of speed as a group factor. In general, the more intelligent worker is also the quicker worker. The results confirm Bernstein's conclusion.

(4) (*a*) On the basis of the specific correlations it is possible to select the best testing scale. Both positive and negative correlations are significant. The results of both methods are practically identical.

(*b*) The development of the Bright-Young *versus* Dull-Old ratio as a criterion fully supports the conclusion of 4(*a*), that the best combination from the tests investigated is Number Series, Absurdities, Best Reason, Cipher, Analogies, and Common Sense.

(5) The results support Burt's conclusions on the value of an internally graded group test, and justify our conclusion that the group of tests selected by this investigation constitutes a valid practical measuring scale for the range of age groups tested.

Some Observations on American Education.

By M. H. Carré.

I.

Opportunities for first-hand study of education in America by British teachers are rapidly increasing. Many hundred Fellowships and scholarships, provided by Americans, promote these visits ; and exchanges between university teachers are becoming frequent. A few years ago such intercourse was confined to administrative officials. The effect of these personal observations on English teaching will, in time, be important ; and if the vast achievements of education in the United States are fairly assessed, without insular prejudice or uncritical zeal, scholastic principles in both countries will be powerfully enforced. The leading centre for the study of education in the world is Teachers' College, Columbia University, New York ; and the recent foundation of the International Institute admirably meets the interests and needs of the large body of students from the countries of Europe and Asia who gather at the college each year. A comprehensive course in the main features of American education is presented to this group ; and the description and discussions are followed up by carefully planned visits, each week, to some representative educational establishment in the neighbourhood. More than this ; two extended tours through the schools, training colleges, universities and education departments in several of the leading States of the Union are organized. Thus, before Christmas, the group, which embraces students from twenty-four nations, toured schools and colleges in Maryland, the educational administrative offices at Washington, and rural schools and negro colleges of Virginia.* More recently a round of visits was paid to institutions in Connecticut and Massachusetts.

Foreign students, in addition to their more specialized pursuits, which the extraordinary range of courses at Teachers' College amply care for, are thus able to consider in a very practical manner some of the principal problems and accomplishments of American education. A few of the manifold impressions which these expeditions have left on the mind of one who was privileged recently to be a member of this international group are here set down. But a warning must preface these remarks. Inferences concerning education in England might safely be drawn from an examination of schools in

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*A brief account of this tour was given in the *Times Educational Supplement* for December 11th, 1926.

four or five county areas. But generalizations from a similar survey in America would be decidedly risky. The area of the United States is twenty-five times the size of Great Britain; and what is more essential, the local variety of its institutions is endless.

It was this diversity which, on our visits, struck some of our Central European friends even more forcibly than the British section. In America there is no central authority, no Federal system; nor is education mentioned in the constitution. The Federal Bureau of Education, at Washington, which we visited, is principally occupied in collecting statistics and in compiling reports. School systems are not even limited to forty-eight; for, although *de jure* the State is the unit of administration, in practice it delegates its powers; and school districts, towns and townships, counties and semi-counties, are in different states, and in varying degrees, the effective authorities for the operation of the schools. Such authority, locally elected, we found to include the power to build schools, devise curricula, and appoint teachers. Eight-five per cent. of the school funds in America comes from local sources. Of late years there has been a movement towards a higher degree of state centralization; but at present few states possess a central code of education.

Such local independence is doubtless connected with that experimental handling of education which is so remarkable in America. Further, the remoteness of rural areas from supervision and advice compel self-reliance. America is twenty-five times the size of Great Britain; but its population is barely twice as large.

As he visits the schools, especially those in the neighbourhood of New York, the attention of an English visitor is arrested by the types of children in the classes. I attended a class in a large high school for girls in New York City, in which the pupils were required in turn to recount some story, preferably taken from their family history. During the period while I was present ten girls "recited"; the scenes of the tales were Alsace-Lorraine, New York, Italy, Sweden, Czecho-Slovakia, Seville, Ireland, Finland, Austria, and Russia. Persons of foreign parentage recently immigrated into the United States number 30,000,000; and there are 10,000,000 negroes. This element in American education has to be considered when people indulge in comparisons between American and European standards.

Certain idiosyncrasies of the teaching process in America which press on the notice of foreign visitors may, perhaps, be traced to the historical circumstances of its people. The versatile and sturdy opportunism of the pioneer, expressed politically in a radical faith in equality of rights and responsibilities, was never overlain by the standardization of the industrial régime; the enormously heightened competition, indeed, tended to sharpen these qualities. The status and characteristics of the American teacher display the creed of direct democracy. She (for teachers even in boys' schools are women) is not, as in most countries of Europe, a State official; and until recently, especially in the rural areas, her qualifications were anything which the local elders chose to make them; which was often very little. She was little guided, till a few years ago, by any standards or procedure beyond those which were suggested by her own unaided common sense; and the code to which she was sensitive was the code of the parish. This inexpert conception of the teacher's work naturally meant a professional outlook which lagged far behind the disciplined European corps. Even now not only is the proportion of teachers who are trained in America low, but the average period of service is less than three years; the change of staffs is incessant. The assumption has been that teaching is a task which any person who cares to attempt it can perform; just as any citizen can become, without any special training, Governor of his State, or President of the United States. Although the National Educational Association has now an enormous roll, the qualification for membership and the trend of its activities distinguish it from parallel bodies in England and Europe. Its numerous sections, such as the Department of Elementary School Principals, appear in their conferences and committees to be engaged, not in seeking to adjust themselves to administrative rulings, but in discovering independently for themselves what their function ought to be; and in organizing, amid the immense welter of the independent districts, their own qualifying standards.

The experimentalism of the eager amateur, backed by an interested and isolated neighbourhood, has been the key to another feature of American education. As Professor Monroe pointed out to us, we hear more of experimental schools in Europe because most American schools have been experimental. The significance of great schools of education like those at Columbia and Chicago Universities is not that they seek primarily to encourage experiment, but that they strive to estimate and reduce to order the confused mass of existing methods, curricula, and standards.

This parochial and unofficial background may be observed too in the methods of the classroom. Traditionally the onus of the lesson has been laid on the pupil; he discovered the answers required of him as best he could; there was little formal presentation, and frequently no common text-book. The system perforce and also by design encouraged initiative and self-reliance ; it made perhaps too for superficiality and opportunism. But the tendency of modern educational theory to relegate the teacher to the position of an adviser and to rely on the pupils to bear the method and discipline of the lesson, is deeply planted in American education.

II.

In point of programme and organization the elementary schools which we visited did not differ markedly from schools of similar grade in England. The teaching of reading by means of notices and their appropriate actions was in several places skilfully carried out ; there was a tendency to group together, even at this stage, history, geography, and the subject termed civics ; and in one-teacher schools in the rural departments of Maryland we listened to lessons on the Acropolis of Athens and the Odyssey. The methods of the classes seemed to be distinctly freer than in our schools ; "recitations" by individual pupils almost took the place of instruction by the teacher ; in the more "experimental" schools of New York the class was as active and as clamorous over the politics of the Civil War or the tactics of the Battle of Lexington as gulls with a biscuit. And while this was exciting, our national prejudices desired a trifle more of the intellectual authority of the teacher on the issue at stake.

In breadth of popular support there was, of course, a significant contrast with our free schools. In a typical school in New Jersey I spoke with children whose holidays were spent in Italy ; and these, the children of directors and professors, were sitting side by side with the children of storekeepers and mechanics. There are less than 2,000,000 enrolled in parochial and private elementary schools in the United States ; in the public schools there are 20,000,000. In the Eastern states, at any rate, where the private schools are most numerous, it is probably the immigrant population that diverts children from the open schools. The newcomers from Central and East Europe bring problems of language and often of custom which retard and complicate the progress of the young American born.

Kindergartens were everywhere springing up in urban schools. Here is an instance of reciprocity, for the author of this function of the American schools was Mr. Fisher ; and the movement, which has already outstripped its models, was pioneered byEnglish teachers. There are six grades in the American elementary school ; the children enter Grade I at seven. The compulsory laws in the State of New York are these. All children from seven to sixteen years are required to attend school regularly, but a child at fourteen may leave school to go to work if he has completed the eighth grade, at fifteen if he is in the seventh grade, and at sixteen years, no matter where he may be in school. But further, in any of these cases, he must attend continuation school one half-day a week, while employed, until he reaches his seventeenth year.

The immense coruscations of psychological science which play around the schools in America were reflected in the use of standard tests for promotion purposes. The urban schools, too, held established relations with accredited psychologists, who gave guidance in classification and in troublesome cases.

These urban schools had weighty systems of political government. I recite the preamble of the Constitution of the Civic League of the Sixth Grade of Lincoln Avenue School. " We, the pupils of the Sixth Grade, in order to form a more perfect union, administer justice, and provide for the common welfare, do ordain and establish this Constitution for ourselves." The Judicial Committee of this League, however, with a disarming frankness, included the Principal as Chairman and the Sixth Grade teacher. But the service of these bodies of prefects to the schools and to themselves is assuredly healthy and valuable.

An admirable practice which we came upon in more than one school was a system of mutual improvement among the teachers. A scheme of internal demonstration lessons, followed by discussions, was in vogue.

But amid many interesting details which British teachers could admire what in truth was most obviously praiseworthy was the equipment and architecture of the schools we saw. In the rural districts we came upon one or two old-fashioned schools. But in general the buildings appeared handsomely finished without ; and within we found light, air, hygiene ; appropriately devised movable desks ; large playrooms, often libraries and manual departments. And in every room, a telephone.

III.

An important reorganization of schools, parallel to the trend in England, is in process throughout American education. Teachers in America, as in England, have long recognized that the chief field of waste in education is to be found in the upper grades of the elementary schools. For these years demand a greater diversity of interest than the traditional school has been able to meet. But the junior high school system has grown more rapidly than our corresponding organization, and appears to be more closely articulated with the senior schools. The curriculum also of the junior high schools is far ampler than those of our central or senior elementary schools; wider even in scope than our secondary schools, with which perhaps, in view of the age at which our boys and girls enter, the American schools ought more fairly to be compared. The comprehensive range of the new American schools is indeed a point of attack for many critics. There are at least 2,050 of these schools now in operation, though the greater number are still combined in the same building with the senior school. With the appearance of the junior high school the accepted plan of eight grades or years of elementary school, followed by four of high school, is being replaced by six grades of elementary school, three of junior high school, and three of senior high school; the transitions being normally made at twelve and at fifteen years of age. Testimony to the advantage of the earlier transference was given both by teachers and pupils in the junior high schools which we visited. Emerging special abilities and purposes were met by diversified programmes and by abundant provision of libraries, laboratories, and workshops. In a palatial junior high school in one great city we found five systems of curricula in simultaneous operation. These embraced courses in general academic subjects and in technical subjects. During the first term the pupils try phases of all five curricula, with a view to testing their talent and acquiring first hand information concerning the variety of courses which are open. In a magnificently planned combined high school we inspected shops, all busily occupied, for training in commercial art, printing, drafting, arts and crafts, lithography, cabinet making, machine work, pattern making and foundry practice, sheet metal work, electrical mechanics, automobile engineering, and home economics.

The cosmopolitan programme of these huge schools, offering many kinds of vocational as well as of general education, affords a contrast with English policy, which prefers separate institutions each devoted to one set of professional training. There appears to be considerable criticism of the adequacy of the vocational training in these comprehensive schools; but compared with an exclusively literary routine vivid evidence was afforded of its general educational merit.

In the city high schools what was particularly impressive was the manner in which the authorities in each school sought to combine their huge numbers—assuming that such a concentration in one building is necessary—with very broad scope of educational choice.

One girls' school had over 4,000 pupils enrolled. It was organized into four separate schools, each with its appropriate head and staff; the whole under a Principal with a general administrative staff. Each school, which was operated, if the expression may be used, on distinct floors of the vast building, met a different set of educational requirements; three being divided vertically, while the fourth, for senior pupils, worked in special groups at studies preparatory for college. The number of "elective" studies—they have reached sixty odd in American schools—provided an intricate problem in administration. Handbooks explaining the system were provided for each pupil; and larger pamphlets were handed each teacher, allotting for every day of the term successive routine duties for the central administration.

These larger city schools included psychological departments. Intelligence tests were given each pupil on entry and at intervals afterwards; and vocational tests were given backward students. In the girls' school which has been mentioned a personality card was filled up by her teachers for each girl. The items on this card included such points as personal appearance, neatness, social qualities, leadership, and politeness. How far the files in which these cards are kept are satisfactory substitutes for the personal knowledge which smaller numbers make possible is a consideration worth discussion.

The most distinctive element in the curriculum of these high schools was, we thought, the emphasis laid on "Social Study." Citizenship, national pride, community spirit, were the keynotes of assignments in history and geography; elaborate reports, worthy of a graduate thesis, into the institutions of the community were outlined for investigation and report; and sectional competitions, the Arista Society (composed of school leaders in all the schools), the corporate ritual of the school assembly, served to translate these aims into practice. Social study, the elements of economics, and citizenship, is of all divisions of the school programme engaging the dominant attention of American educators; and under the leadership of men such as Dr. Rugg, schools throughout the country are performing work of extraordinary interest in this field.

Most of the lessons employed, at least in theory, the project method. Instrumental to the success of this method were the libraries, the excellence of which arrested the attention of the English group. The shelves of these spacious rooms were filled with standard works of reference, literary and scientific classics, biographies, books of travel, modern poetry and drama; and current magazines and newspapers were spread on view. Notice boards displayed information on passing world affairs. These libraries were crowded with readers.

In country districts we visited consolidated high schools to which the boys and girls were transported by means of motor buses from outlying areas.

From the city senior schools about 3 per cent. go on to college.

IV.

The relation which appeared to exist between the parents and the schools deserves special mention ; for, judged by our custom, it was extraordinary. The activities of the parent associations is one criterion of the fundamental belief in education in America. We were able to observe some remarkable instances of the work of these societies. Numbers of organizations auxiliary to the schools have long been in existence in most of the States ; they are now linked together under the National Congress of Parents and Teachers with headquarters in Washington and with numerous local branches in forty-seven States of the Union. The official membership of this rapidly growing body is at present slightly over 1,000,000. Massachusetts, for example, has 273 associations ; the vast rural area of Delaware has associations in 84 per cent. of its school districts, exclusive of the town of Wilmington. And, it must be remembered, a large percentage of these parents are foreigners.

The two principal objectives of the National Congress of Parents and Teachers are described in the Constitution of the Congress, as follows :

(1) To promote child welfare in home, school, church, and community ; to raise the standards of home life ; to secure more adequate laws for the care and protection of women and children.

(2) To bring into closer relations the home and the school, that parents and teachers may co-operate intelligently in the training of the child, and to develop between educators and the general public such united efforts as will secure for every child the highest advantages in physical, mental, moral, and spiritual education.

The groups of parents and teachers apply their general formulæ according to local interests and needs. Some confine their activity to providing some material benefit for the school. The parents help to purchase or in country districts often make furnishings and equipment desired by the teachers. The teacher of a one-teacher school in the heart of Maryland country told us how the fathers had come up after their day's work to put up an enclosure for the school playing fields. In another area the mothers arranged for hot lunches for the children—a common form of these associations' service. Many parent-teacher associations contribute toward a fund from which loans are made ; in some places towards payment of bus fares for the parents of children who travel far to school ; in others to more important schemes of scholarship and maintenance allowances. Thus the parent-teacher association of California in a recent year raised $160,000 while the community leagues of Virginia contributed $165,000 in 1924 to educational development. The National Congress has a fund which may be drawn on for assistance in higher education. We saw notices of parties and sales on behalf of the fund of these associations.

An even more interesting feature of these associations is the way in which they afford a means to share in the teachers' work and responsibility. In one school which we visited, besides general meetings of the association held four times a year, small groups are formed to make a study of those aspects of education in which the parents can, by pre-school training of their children, or supplementary guidance in the home, support the efforts of the school. In this school a special study group has followed for two years a definite plan of study of topics related to problems of interest to the parents. In one western city there are sixty-one such study circles. This city has 32,000 members.

The National Congress appoints yearly a number of Standing Committees. Some of the topics under the recent consideration of these groups were : rest periods, the use of motor cars by high school pupils, means of encouraging reading at home, ways of promoting musical appreciation, arrangements for country expeditions, and the dress of school girls.

Many of the district associations publish monthly bulletins. One such lies before the present writer now. It is published by the Federation of Parent-Teachers' Associations of Baltimore County, Maryland. Its contents report on the work of the Federation's Committees on Health, Libraries, Legislation, School Property, and Publicity. There are also articles with titles : " Is your child ready for school ? " and " Reasons Parents should Visit Schools " ; and a full financial statement of the County Board of Education for the current year. The price is two cents.

Some associations, aided by the State Department, issue periodical pamphlets for parents ; and in two or three areas the radio service is employed, when experts in various fields discourse to the public on educational matters. We found this system in regular practice in Boston.

The central business of educational organization, the preparation of the teacher, is a matter of peculiar moment to American education, for the success of the experiments in methods and curricula hangs on it. We examined in considerable detail the work of several training colleges. But impressions of these elaborate institutions must be reserved for another occasion.

Plan for a Comparative Study of English and American Secondary Schools.

BY ARTHUR J. JONES.

ENGLISH speaking people throughout the world are coming into closer and closer relationship each year. Especially is this true of England and the United States. We are coming to see that there is and can be no essential difference between our ideals and our standards of conduct and of life in general. Citizens of each country are eager to learn more about the institutions of the other and to get inspiration and help from a study of the methods used to accomplish the results desired. Especially is this true of those interested in education in the two countries. We are coming to feel that, divergent as are the two systems of education in some respects, yet our aims are largely the same, and that this very divergence may hold something very suggestive that may be helpful in solving the problems confronting each nation. There have been many reports on American schools made by English visitors and volumes written by Americans on English schools. These have, in many cases, given valuable comparative data of a general nature and shown clearly certain outstanding differences between the two systems of schools. These differences, however, have dealt more with certain administrative features than with the conduct of the schools themselves.

We very much need some more intimate and detailed study of the real work of the schools. Something that will enable us to picture clearly just what the teachers in each system of schools are doing in the classroom, what their aims are, how they conduct a "recitation," and what results they actually secure.

The need for such a study is made more apparent by the misinformation given publicity in daily newspapers regarding schools and educational aims. Well intentioned, but ill-informed, Americans often give utterance to their personal opinion regarding what is being done in the schools of the United States and what we are trying to accomplish. These are frequently wide of the truth, but are very naturally accepted as gospel truth by Englishmen. English visitors are usually more reserved regarding their schools, but sometimes give entirely erroneous impressions of English schools to their American audiences.

It is now proposed to begin a co-operative study of English and American secondary schools that should give needed information that can be relied upon as accurate. The purpose of the study is to promote a better understanding and a closer, more sympathetic relationship between English and American educators, to provide a medium by which the best methods and practices of one system of secondary education may be made known to the other. Certainly, the aims and methods of English schools will be very suggestive and helpful to us in the United States. It is hoped that a knowledge of the best methods and practices of our schools may be equally helpful to English men and women.

This study is planned to cover several years, and involves the co-operation of groups of English and of American educators. It is inaugurated by Professor E. D. Grizzell and myself, who are connected with the School of Education of the University of Pennsylvania, Philadelphia, Pennsylvania. It will be in charge of a joint committee of English and American school men and women.

The study will involve a general comparison of the main facts and tendencies in the recent development of secondary education in the two countries and a detail study of certain selected schools in the two countries. It is hoped that twenty-five or more schools in each country may be sufficiently interested in the plan to co-operate. These schools will be selected, as far as possible, in such a way that results will be comparable. The topics studied will be selected by the joint committee, but will probably include an intimate comparative study of students, teachers, buildings, grounds and equipment, methods, discipline, systems of examinations, and results.

All available statistical data will be secured and carefully compared. If possible, tests will be constructed to secure comparative data. Regular examination questions used in a school in one country may be sent to schools in the other country and results tabulated.

One of the most hopeful parts of the plan is to promote the exchange of teachers between the schools interested in the study. A plan has been partially formulated by which the interests of the schools are safeguarded and the teachers' pension status will not be endangered. It is hoped that money may be found to finance travelling and other incidental expenses of the exchange teachers.

Professor Grizzell will be in residence in England during the year 1928-1929, and will personally assist in the study.

Finally, it is hoped that the results of the entire study will be published and made available for all interested in a comparative description and evaluation of the two systems of secondary education.

Any head master or head mistress who is interested in the study, and especially any who would like to co-operate in the detailed plan for comparison of certain schools, is requested to write to me at the University of Pennsylvania, Philadelphia, Pennsylvania, U.S.A. If he prefers, such communications may be addressed to the Editor of the FORUM, who will send them to me.

A more detailed plan of the enquiry is here given.

DETAILS OF THE PROPOSED SCHEME.

(I) PURPOSE.

- (*a*) To promote a better understanding and a more sympathetic relationship between English and American educators.
- (*b*) To provide a medium for the study of common problems in order that a knowledge of the best theory and practice in either system of secondary education may be made available to the teachers and administrators in the other.

(II) SCOPE OF THE STUDY.

A.—*General.*

- (1) Comparison of the main facts and tendencies in the recent development of secondary education in England and in America.
- (2) Topics for comparative study :
    - (*a*) Meaning and scope (including aims) of secondary education.
    - (*b*) The secondary school population.
    - (*c*) The secondary school curriculum. (This includes a consideration of all the educational influences of the school).
    - (*d*) Personnel of the secondary school staff.
    - (*e*) Material of secondary schools (buildings, grounds, equipment, supplies, etc.).
    - (*f*) Administration of secondary education.
    - (*g*) General tendencies revealed in the development over the period 1900-1926.

B.—*Detailed.*

A detailed comparative study of a limited number of schools in each country.

- (1) Secondary schools being selected (about thirty schools in England and thirty schools in America).

(*a*) Twenty public high schools in the United States;
(*b*) Twenty municipal and county secondary schools in England.
(*c*) Five private (independent) schools for boys in America.
(*d*) Five private (independent) schools for boys in England.
(*e*) Five private (independent) schools for girls in America.
(*f*) Five private (independent) schools for girls in England.

(2) General topics suggested for study.

Topics actually chosen for investigation will be determined after appointment of joint committees (3*b*).

(*a*) Survey of students in the schools.
(*b*) The curriculum (including studies and activities) and daily programmes.
(*c*) Methods of classroom procedure and discipline.
(*d*) Text-books, laboratory equipment, supplies, etc.
(*e*) Results in comparable subjects.
(*f*) Teachers—selection, training, salary, etc.
(*g*) Supervision or other methods of improving instruction.
(*h*) Systems of tests and examinations; methods of marking.
(*i*) General administrative features.
(*j*) School costs and sources of revenue.

(III) METHOD OF ORGANIZATION FOR CONDUCTING THE STUDY.

(*a*) *In General Charge.*

Division of secondary education of the University of Pennsylvania, Philadelphia, Pa. Organization of the study, collection of material, editing results, general correspondence, and publicity.

(*b*) *Committees.*

Two committees to be appointed, one in England and one in America, to act in an advisory capacity in planning and conducting the study, and to have immediate charge of certain phases of the work in each country.

(*c*) *Professor E. D. Grizzell*, of the Division of Secondary Education, University of Pennsylvania, will be in residence in England during the year 1928-1929 and will actively participate in the study of the English schools.

(*d*) *Professor Arthur J. Jones* will have general direction of the study in American schools.

(IV) GENERAL PROCEDURES IN THE STUDY.

- (*a*) *Collection and Organization of available Printed material bearing on the Study.*
    - (1) Selected, annotated bibliography of the best books and pamphlets, magazine articles, etc.
    - (2) Critical statement of comparative aspects of English and American secondary education since 1900.
- (*b*) *Detailed Study of Selected Schools.*
    - (1) Collection of available statistical and descriptive material, reports, etc., bearing on or related to the study.
    - (2) Organization of tests for comparative results.
        - (*a*) Tests to be used :
            - (1) Standardized tests as far as possible.
            - (2) Regular class or school examinations exchanged.
            - (3) Matriculation—college entrance—examinations.
            - (4) Mental (intelligence) tests, when possible.
        - (*b*) Method of giving and scoring tests :
            - (1) Secure standard conditions as far as possible.
            - (2) Regular class examinations to be exchanged ; English students take American examinations and American students take English examinations; papers graded both by English and by American teachers independently, results compared and comments exchanged.
            - (3) Comparison of questions, results, and of papers of Joint Matriculation Board examinations in England with those of the College Board in America.
    - (3) Methods of securing first-hand information regarding classroom procedures, standards of work and conduct of schools.
        - (*a*) Secure opinions and observations of visitors qualified to report on specific points.
            - (1) Visitors to the United States.
            - (2) Visitors to England.
        - (*b*) Opinions of leaders in education in both countries.
        - (*c*) Promotion of plans for the exchange of teachers.
            - (1) Utilization of existing agencies.
              Secure the co-operation of these exchange teachers by inducing them to report to the committees on certain points :

  - (*a*) Walter Hines Page Travelling Scholarships.
  - (*b*) English Speaking Union.
  - (*c*)
- (2) Developing other exchanges.
  - (*a*) Arrange exchanges between private (independent) schools in each country and between public supported schools in each country.
    As far as possible, arrange exchanges between comparable schools.
  - (*b*) General method suggested.
    - (1) Public supported schools.
      - (*a*) Secure consent of :
        School Boards or Local Education Authorities in each country.
        English Board of Education and possible State Boards of Education in America to preserve pension rights.
        City superintendents and principals.
      - (*b*) Have each teacher granted a year's leave on full pay ; i.e., salary of each teacher to be paid, as usual, by his own local authority and kept on the roll of teachers.
    - (2) Private (independent) schools.
      - (*a*) Work through head masters and principals of each school.
      - (*b*) Same plan of financing as above.
- (3) Provide, if possible, for extra expenses of teachers :
  - (*a*) By Local Education Authority.
  - (*b*) By subvention from some foundation.
- (4) Devise definite plans and blanks for reports to be made on certain specified points.
  - (*a*) To their own Local Educational Authority.
  - (*b*) To the committees in charge.

The Next Step in National Education.

Being the Report of a Committee consisting of the following: The Rt. Hon. the Viscount Haldane, R. F. Cholmeley (Chairman), Percy Alden, F. W. Goldstone, Sir Benjamin Gott, Albert Mansbridge, T. Percy Nunn, G. S. M. Ellis, A. J. Lynch. (Univ. of London Press, 1927. 2s. 6d. and 3s. 6d.)

"The educational provision for adolescents in England and Wales," say the writers of this book, "has at present two cardinal defects. In the first place, 1,900,000 pupils now in elementary schools need for their proper education schools of quite a new type, at least as well organized and equipped as those central schools and departments that now supply the needs of some 107,600 at the same age. In the second place, 300,000 pupils are completely lost to the educational system when they reach the age of fourteen, and an additional 220,000 when they reach the age of fifteen . . . All other defects are insignificant beside this numerical deficiency, and most of the other changes which we have to recommend are consequent upon the profound alterations that supplying it will involve."

The problem of which this deficiency is the core, submitted to the Consultative Committee of the Board of Education, was simultaneously investigated by the privately-formed Committee named above, and the report which they issue should form a very valuable part of the nation-wide propaganda which will be needed if the Consultative Committee's recommendations are to be brought to good effect. The two Committees had one member in common (Dr. Mansbridge), and three other members of the smaller body were important witnesses before the larger.

In all the broad lines of the recommendations they are in harmony. In particular, the age of compulsory attendance should be raised to fifteen as from 1932, and the great majority of children should be transferred at eleven to "grammar schools" or "modern schools"—(to use the Consultative Committee's terms). This report suggests that about 25 per cent. might go to the former and 50 per cent. to the latter.

An impressive coloured chart at the beginning enforces the statistical survey; its blank area below fourteen and black space above, both many times outweighing the coloured spaces beside them, show the terrible proportion of our youth whose needs are being ill met or not met at all. A historical survey shows our uneven progress towards what we have so far attained, and a chapter on "The Problem in other English-Speaking Countries" brings home to us how far some others are leaving us behind.

The authors believe that probably "it will be impossible for some time to come to enforce the compulsory day continuation clauses of the Fisher Act. The conditions of success will not be present until the country has experimented widely with a scheme of voluntary day continuation schools which will give an opportunity for creating an efficient teaching staff, for evolving a suitable curriculum, and for erecting buildings, and which, above all, will gradually accustom the public mind to the idea of part-time continued education, and demonstrate its advantages both to the pupils and to those who employ them."

In the central schools "ultimately school conditions should not be inferior to those of existing secondary schools, but, during the transitional period from the elementary system, it may be necessary to permit some deviation from this standard as a temporary measure." The present sporadic conversion of central schools "into secondary schools of a new type . . . should be recognized as deserving of systematic encouragement."

The Committee holds strongly (at least according to certain passages of the report) that central schools should be selective. Although on page 113, in apparent reference to the non-selective type in Surrey, they say: "There is hardly any doubt that the central school has justified its existence, and that it is a great advance on the ordinary primary school," yet on the next page it is laid down: "Whatever virtues are claimed for the non-selective school, most of them would be equally obtainable in well-organized "higher tops." This page proceeds: "The chief defect in the upper ranges of the elementary school is that it can seldom provide proper facilities for post-primary education. This is a defect that in rural villages or isolated small towns ought to be remedied if the "higher top" is to have its chance, though the cost is bound to be heavy. The sole advantage that the non-selective school offers over the "higher top," provided always that the latter is well staffed and equipped with the essential educational apparatus, is that it has more pupils, so that with careful grading a variety of courses may be followed in one school." But the "more pupils" means much more than this—it means also a far more practical possibility of proper staffing and equipment. The chapter surely passes too lightly over this. In view of the insistence elsewhere on the wrong done by neglecting those who are not conventionally gifted, and in view of the statement on page 120 (italics mine) that "ultimately *all* children who are not feeble-minded should be transferred to . . . diversified secondary schools," it seems possible that the Committee's collective judgment has not been entirely clear on the question.

Personally, as a reader who is honestly in doubt, I should have welcomed more discussion of the whole question of sorting children at eleven into diversified types of schools, as opposed to the theoretically simpler plan of one big school with diversified courses within it. The report says repeatedly that transfer from one type of school to another must be kept easy, but will it ever be so easy or so satisfactory as transfer within a single school? Will it in fact often happen? In London at present, central schools are preparing their own best pupils for the Oxford local examination instead of transferring them to the secondary schools; and I do not think I have ever met an instance of a pupil being transferred from the secondary to the central because he had proved to be better fitted for a simpler and more practical curriculum. The authors of this book assume rather than discuss the selective plan that has grown naturally out of our educational history, with schooling developing from opposite ends of an elaborately graded social scale. I hold no brief for either the selective or the non-selective scheme, but I should have liked to know whether the Committee held that the former was ultimate and ideal. Their recommendation that all fees should be abolished would at any rate make its consistent application more possible.

On a different point, the report has some excellent remarks on "the view so commonly held that the free-place examination is a satisfactory test of ability to profit by continued education." "When the free-place system was introduced, Mr. McKenna, who was then President of the Board, stated categorically in the House of Commons that the children 'would only be asked to pass a qualifying examination.' This aspect of it as a qualifying test is still uppermost in the public mind; but obviously, under present conditions . . . it has become a competitive test of great severity, and . . . the standard needed for success varies from district to district in a most distracting way. If we take the country as a whole, the free-place examination, as we know it . . . is hardly even a criterion of ability to profit by secondary education of the usual type."

A valuable feature of the book throughout is its concrete study of experiments carried out by different local authorities. All these things are practicable because they have been practised. What we need is more and more of what has been proved good. "All other defects are negligible beside this numerical deficiency." This report is one more tool for the reformer's hand, and the authors are to be thanked for a helpful and laborious piece of work well done, and a very readable statement of the outcome. HELEN WODEHOUSE.

The Abilities of Man: their Nature and Measurement.

By C. Spearman, Ph.D., F.R.S., Grote Professor of Philosophy of Mind at the University of London. (Macmillan and Co., London, 1927. Pp. 415+xxxiii. 15s. net.)

PROFESSOR SPEARMAN'S new volume brings together and sums up a long series of laborious researches, carried out under his inspiration, during the past twenty years. Its publication has been eagerly awaited; and it at once takes rank among the most important publications on psychology issued during recent years. The book consists of an analysis of the intellectual abilities of man, with special reference to the mental differences between individuals. Since the individuals, upon whom the researches were made, were for the most part children of school age, the results are of the greatest interest and practical importance both to the educational psychologist and to the teacher. The present volume is the second in a series of three. The first dealt with the abstract nature of intelligence and the general principles of cognition; the second now applies these principles to the study of individual differences; the third, we are told, will soon follow, and will deal with the conative and emotional aspects of the mind, and review the main conceptions of general psychology prevalent at the present day.

The book falls into two parts. The first describes the chief theories of intellectual ability propounded from the days of Plato onwards; the second consists of a summary of all the available evidence bearing upon these different views. Three leading doctrines are distinguished. The first, the "monarchic" doctrine, assumes that "mental ability lies under the soveriegn rule of one great power named intelligence." The second, the "obligarchic" doctrine, assumes that the mind can be split into a collection of separate faculties such as memory, observation, reason, and the like. The third view, the "anarchic," goes further still: just as general intelligence has been broken up into separate faculties, so these faculties have in turn been broken up into an almost infinite number of more elementary capacities, each independent of the rest.

Professor Spearman's own view is, to use his own term, an "eclectic" one. He maintains that a single, central factor may coexist side by side with a number of specific factors, some of them narrow, multitudinous, and wholly independent, others overlapping to form broader functions not unlike the old-fashioned faculties. This single, central factor he terms *G*. It may be roughly identified with what is popularly known as "general intelligence." Professor Spearman describes his new criterion for the existence of a central factor—the method of tetrad differences; and applies it first to prove that one fundamental factor enters into all our intellectual abilities. The same criterion is applied to demonstrate the existence of factors more specific. And perhaps the most novel and the most suggestive part of the whole volume are the chapters which endeavour to enumerate the chief specific abilities or "group factors," and to marshal the evidence for their existence.

Professor Spearman doubts whether there is any conclusive evidence in favour of a factor of limited generality underlying sensory discrimination of various kinds. He equally doubts whether there is a group factor running throughout all forms of motor ability; he believes, however, that there may be specific correlations between a few specialized forms of motor activity (such as those tested by the so-called reaction-time experiment) which may be sufficiently broad to have much practical importance. He finds no group-factor underlying all forms of imagery or imagination, and no group factor underlying abstraction. He finds a small group factor running throughout memorization, and a more conspicuous group-factor underlying various forms of sensory memory. Perseveration, too, appears to depend upon an important group factor, which, however, may be nothing but another manifestation of mental energy. Fatigue may be general in a certain sense; but apparently it is not transferable. Two further specific factors of great importance are those underlying oscillations in efficiency, and manifestations of purposive consistency or self-control. Of all group-factors hitherto discovered perhaps the most interesting to the teacher are those underlying what may be called respectively the arithmetical, the mechanical, the logical, and the psychological abilities respectively. In each of these a group-factor seems to be demonstrated which is of sufficient breadth and importance to possess serious practical consequences for educational, industrial, and vocational psychology.

Thus it would appear that mental energy is general, but that the various mechanisms which that energy drives are remarkably specific. If this thesis wins acceptance, then the whole basis of our intellectual life becomes far easier to analyse, and the measurement of individual differences in mental make-up will be quickly set upon a sound and scientific footing. The evidence which Professor Spearman brings together is so vast and so conclusive that it is difficult to imagine that any investigations in the near future are likely to upset his general position to any considerable extent. Meanwhile, whether we accept his view or reject it, the book remains one which all who are interested in the practical applications of psychology must unfailingly read.

CYRIL BURT.

Essai de Philosophie Pédagogique.

Par Fr. de Hovre. Traduit d'après l'édition flamande par G. Siméons.
(Bruxelles, 1927. Librairie Albert Dewit. Pp. xxiv+362.)

It appears from the preface that this volume is the first of three dealing with " the philosophical foundation of the Catholic theory of religion and the educational foundation of the Catholic conception of life." Its central thought is that every philosophy of life implies a theory of education, and conversely that every theory of education is based upon a philosophy of life, some conception of man, his destiny, and his relation to society. The truth of this thought is shown by setting forth in this volume three modern conceptions of life with their corresponding theories of education. In a second volume the same procedure is to be applied to four more conceptions. In both, however, the aim is to give more than an exposition of these views ; they are critically examined from the standpoint of Catholicism, the principles and educational theory of which are to be developed in the third volume.

The author makes a strong indictment of modern education, in which, however, there is substantial truth. The capital fault is the absence of any clear and universal ideal and, as Eucken says, " without an ideal all our reforms in education must miscarry." The clear ideal is lacking because modern education is based on no adequate philosophy of life ; everything is relative, there is nothing absolute. In Europe the educator does not " get down " sufficiently to the pupil ; in America he " gets down " so low that he forgets to raise the pupil. Education consists at least quite as much in the adaptation of the pupil to the educator as in the adaptation of the educator to the pupil. The modern educator is always dreaming of new and better methods of correcting the faults and weaknesses of childhood, forgetting too often that education is much less the result of superior technique than the fruit of the influence of a well-developed personality. What Pascal called *le moi haïssable* is often given as the aim of education to-day ; self-assertion is the goal ; yet true independence is impossible without self-denial, and all self-denial constitutes an assertion of self.

This weakness is attributable largely to a false conception of the competence of science, especially psychology. Psychology alone is powerless to solve the problem of education ; equally necessary is knowledge of the aims of education. The fundamental problems of psychical life are beyond the reach of laboratory methods and experimental psychology. The true psychologists are the great seers like Dante, Shakespeare, and Goethe, whose knowledge is founded on intimate contact with life and men. The study of the great classics of life and education, the serious examination of human life in and around him, and genuine love of youth will carry the educator much further in his teaching than experiments and inquiries.

The remedy is to be found in the synthesis which the Christian religion alone, with its hierarchy of values, can supply. The Christian ideal of the God-Man supplies education with an ideal that is clear and irrefutable, which can unify character, give it an unshakable foundation, and enable the spirit to triumph over nature. The Christian spirit of self-sacrifice reconciles the two apparent opposites, self-denial and self-assertion. Finally, Christianity synthesizes by uniting knowledge of the nature of the child with love of the child.

The significance of these views for the teacher is glanced at in various parts of the book. The teacher's philosophy of life is declared to be the soul of his teaching work. We are reminded that what has weight in education is not what we *say* all day long but our own control over self, and it is laid down in Foerster's words as a fundamental principle of religious education that the educator should pray not only for his pupil to be made better, but above all to be made better himself.

The first of the three modern conceptions of life and education considered in the book (pages 1-69) is Naturalism, which is subjected to a thorough examination, directed mainly towards Herbert Spencer as the leading exponent of Naturalism and based upon the criticisms of Naturalism made by Emile Boutroux and Rudolf Eucken. There are weak points in this section ; e.g., a quotation from Bergson in support of the view that the brain is an instrument of psychical life (pages 34-5) is merely a categorical statement that is quite invalid as evidence, while the assertion (page 36) that " man alone is educable " is very sweeping in view of the modern experiments (e.g., Koehler's on apes) on the capacity of animals to profit from experience. Yet these weaknesses are few and detract very little from the value of the examination, which is skilful and searching, and of the criticism, which is sound and suggestive.

Approximately twice as much space (pages 71-223) is devoted to the exposition of the Socialist conception of life and the educational theories of radical socialists like Dewey, Natorp, Kerschensteiner, and Durkheim, which are criticized from the standpoint of moderate social educators like Pestalozzi, Paulsen, Rein, and especially Willman and Benjamin Kidd. The judgment on Kerschensteiner (page 116) is surprisingly severe, but it appears to be fully documented.

One or two only of the many valuable points made in this section can be briefly mentioned here. The fatal mistake of Socialism in completely subordinating the individual to society is clearly exposed and attributed to a rigid application of the biological analogy of a living organism, an instance of that abuse of analogies which is a great fault of modern science. The Socialist, moreover, is condemned for regarding religion as a product, instead of as a powerful determinant, of society. Kidd, on the other hand, is praised by the author for grading education as primarily ethical-religious, then social, and lastly intellectual, for emphasizing the importance of social heredity, and for insisting that the idealism of youth is the vehicle of civilization and that the qualities of woman, love and self-denial, are of paramount importance for the progress of civilization.

The remainder of the volume, about 130 pages, is devoted to an examination of Nationalism in education, Germany being taken as the example of the theory in practice, and Fichte as the inspirer of the theory. A general criticism is supplemented partly by Langbehn's attack on German culture and education, partly by an exposition of Foerster's views on culture, morality, and the making of character, and his suggested synthesis for education based on the Christian conception of life. The destructive criticism is generally sound and suggestive. A very instructive comparison of State and nation appears on pages 270-1, while it is a profound truth (page 274) that " the relations of the individual to the nation, and those of nation to nation and to humanity, can only be accurately understood if they are associated with the Christian idea of society."

The treatment of Fichte, however, can only be described as unfair by any student of his ideas. He is said to be (page 235) a defender of the ethical principle that the nation and the State are above conscience and above what conscience calls " good and evil " ; as a matter of fact, Fichte regards the State as responsible to God and to its own good conscience. It is laid down (page 275), as the opposite of Fichte's views, that nations must renounce their spirit of domination and serve the eternal destiny of man and the glorification of the Creator ; but Fichte himself would have nations respect one another and educate their sons in no narrow and exclusive spirit, but in a universal and cosmopolitan spirit, so that ultimately mankind becomes a real unity, a single inwardly united Christian state. It is urged (page 277) that the State has no right over the life of the spirit ; Fichte emphatically declares that religion, morality, and philosophy are beyond the scope of the State's activities. The ultimate preservation of the State is said (page 277) to depend on the spirit of justice and obedience among its citizens ; no one realized better than Fichte that the mainspring of society and of the State is the spirit that animates the individual. The description (pages 277-8) of what constitutes the greatness of a State, though apparently intended as a criticism of Fichte, might have been taken almost literally from his works That the development of intelligence is the supreme aim (page 244) is probably true of German education up to 1914, but it is not true that Fichte inspired that conception, for he regarded morality as the ultimate goal of education and intellectual education as merely a condition and means of moral training. It is asserted (pages 250-1) that Fichte, " a fanatic in science," is responsible for the cult of science in modern Germany ; but of science in this modern sense Fichte had little to say, regarding it as having no particular or independent value ; the science he constantly speaks of is what we should now call philosophy. Anyone who has read Fichte's writings on university education will realize that his conception of the functions of a university cannot be reduced to the modern formula, " training in scientific research " (pages 250-1). Finally, in dealing with Fichte's conception of the life of the spirit as the divine, eternal life, there is not the slightest justification for the word " intellectual " in the comment (page 252) : " Thus the intellectual life of the nation is raised, in this lower world, to the level of the divine, the eternal ; not the individual . . . . but the nation and the intellectual life of the nation are immortal."

With the general conclusion arrived at in the book, that religion must be the root of any adequate conception of life and therefore the foundation of any true theory of education, there will be substantial agreement ; and it is well that we should be constantly reminded of this. Many people will no doubt hesitate, however, or refuse altogether to accept the author's further proposition that the true religion is the Catholic religion, and that the Catholic Church may claim to be the perfect society. This view certainly colours the whole work, as the following example will show ; after discussing Kidd's contribution to the philosophy of life and the theory of education, the author does not hesitate to add (page 222) : " Kidd is not a Catholic. In this respect he must be completed here and there." Yet, although this necessarily comes to mind in reading the book, the particular standpoint adopted does not really invalidate the arguments contained therein for those who believe in the paramount importance of religion, but do not subscribe to the Catholic faith.

G. H. TURNBULL.

A Day Continuation School at Work.

Edited by W. J. Wray and R. W. Ferguson. (Longmans, Green, and Co., Ltd., 1926. Pp. 211. 8s. 6d. net.)

THIS book is a revision of the edition of 1920, a new chapter having been added on the development of the continuation school at Bournville from 1920-1925. The book when written was an interesting account of an important experiment in continuation education and was intended to serve as a guide to others who, with the hope of the new Act of 1918 before them, saw the prospect of a vast organization of a new type of post primary education. Though the prospect of these hopes was soon blurred yet the book has considerable interest both for the experience it provides and also for the story it tells. The Bournville experiment in continuation education began in 1906 with evening clases for employees under sixteen. In 1913, as a result of these experiments, day continuation classes were established and the first public day continuation school for boys and girls between the ages of fourteen and eighteen was opened under the control of the Birmingham Education Authority. At Easter, 1925, new buildings were completed, and Messrs. Cadbury Bros. were sending 2,400 employees (1,850 girls and 550 boys) to the school. The buildings are well equipped. The Boys' Department contains ten class rooms with a workshop for manual instruction, a science laboratory, and a drawing room. The Girls' Department has fourteen class rooms, some equipped for the teaching of domestic science, others as science laboratories, whilst a very necessary addition is a large music room. There is also provision for cinema exhibitions. Even more important, perhaps, has been the realization that the schools should also fulfil their social purpose, so classes for adult workers are held there as well as week-end, summer, and vacation schools. The buildings in short are intended to cater for the social and intellectual life of the factory and village. All boys under eighteen years of age employed by the firm are required to attend the schools for two half-days per week. Girls over sixteen attend one compulsory half-day and may if they choose put in one other attendance per week. The firm pay for all time spent at school with the exception of that of the voluntary students. Certain selected youths, such as clerks and apprentices, are allowed to stay until nineteen or twenty-one years of age.

Much has happened since 1918 to make most of what is here written appear out of date. The works' school as organized by

Messrs. Cadbury has been a valuable social experiment, though it is doubtful whether public opinion will accept it as the solution for the education of the adolescent, or whether such schools will not disappear before State provision, as did the elementary schools established by some enlightened employers during the latter half of the nineteenth century. Still, the school does mark a post war experiment in continuation education which may yet add valuable experience to our solution of this problem. It is noteworthy also as indicating the change which is affecting our attitude to these schools, for, of late, the distinction between the responsibility of the employer or of the State for the provision of educational facilities has taken on a new meaning. It is no longer a question of the differentiation of duties as between the State and the employer which the creation of works schools would seem to imply, but rather of a more intimate co-operation between these two forces in the community. In no sphere is this more clearly seen than in the mining industry. Mining is a skilled occupation where each man is responsible not only for his own life but for those of all his fellow miners. Thus an intelligent participation in his work on the part of each worker is essential. More, the technical staff, from the shot firer and the fireman to the manager, is a large one and is usually recruited from the workers. In such an industry technical training for most of its members is a necessity, and, in the past, most of the provision for education in the mining industry has been of a technical nature, a fact which may have something to do with the suspicion with which many miners regard the provision of education where vocational training appears to be the only aim, and also with the popularity which advanced and revolutionary doctrines enjoy among the rank and file.

For some years, however, the more enlightened employers have recognized the need for specialized training and have quite properly regarded it as a charge upon the industry. Thus, the South Wales Coal Owners have maintained two schools of miners, one at Treforest, established in 1913, the other at Cwmbran, founded in 1914, which are devoted to the technical training of the miners' officials. It was work of this sort which was at least partly responsible for the unique provisions of the Mining Act of 1920. This provided that one penny on every ton of coal raised should be devoted to the general welfare of the men employed in the industry, a remarkable instance of an industry prepared to tax itself for the benefit not of its shareholders but of its producers. For the first experimental period of five years much of the money thus raised has been spent on welfare work, the provision of recreation grounds, and the organization of the clubs. But the other aspects of education work have not been neglected. Two courses were open, the first to organize the technical training of the industry within its own doors, the second to utilize the existing provision of rate-aided institutions. The second obviously was the better, and this has been adopted. In the various coalfields joint advisory committees consisting of representatives of both sides of the industry have been set up to co-operate with the local authorities. Thus the South Wales Coalfield has been organized as a unit—an example which may well be followed in other educational work—each education authority having re-organized its schemes to fit in with the larger regional scheme.

What the future has in store it is difficult to foresee. Public education will probably be provided for all up to sixteen years of age, possibly even later. But industry is after all a form of training as well as a means to livelihood, and the example set by the Coal Mining Act of 1920 will probably spread to other industries. As production becomes more mechanical, more time will be provided for leisure and also for training. And this must mean a much closer connection between the public education authority and industry than at present exists. In this regard educational administration still suffers from the haphazard growth of the nineteenth century. Its catchwords, the most subtle of which perhaps was the much abused "vocational training," have not yet lost their power nor indeed their danger, yet in no sphere of our educational provision has there been so much misunderstanding and in no sphere is there such need for clear and unbiased thinking.

STANLEY H. WATKINS.

Book Reviews.

Social Psychology Interpreted : by J. W. Sprowls. (Balliere, Tindall, and Cox. Pp. xii+268. 18s. net.)

Biology is the basis of the new psychology, but human and animal psychology must still be distinguished, because it has not been demonstrated yet that reaction mechanisms are identical in man and the nearest primates. The evolution of this idea is reviewed in a survey of different schools of thought in the history of philosophy. Social psychology is to be looked at as a series of unsolved problems whose attempted solutions so far have been hypothetical. Professor Sprowls breaks away from the custom of beginning with a metaphysical basis for the principles of social psychology ; he demands the careful collation and examination of facts, requiring the adoption of a dynamic rather than a static conception of society, pointing out that standardization is man's way, but not Nature's, and, as we are dealing with natural things, variation is inevitable. The writer describes the change that he claims is taking place with regard to the theory of instinct ; he apparently finds no line of difference between the habits and the instincts ; environmental situations are stimulus patterns ultimately responsible for the " setting of habits." He says : " Follow an instinct to its roots and it will be found unanalyzable from habit, referable to behaviour in very general terms at best—i.e., capable of application to a wide variety of forms of social behaviour. The fact is that one may choose any instinct—e.g., fear—and by a clever selection of illustrations arrive at the conclusion that nations consummate peace treaties because of it. Fear may thus be called a result of war instead of a cause. Or again, one can marshal his arguments to show that the herd instinct creates and sustains church organizations—a conclusion that no devout communicant would tolerate. Instincts are worthless explanations of social institutions." (p. 166). In war there is a complex pattern reaction. War is an institution because school environment is militarist with its bellicose histories and the public war monuments ; reaction is accordingly and appropriately militant ; the only antidote is to set up counter reaction patterns for peace. But peace as a permanent institution is as yet far in the future. Dr. Sprowls certainly makes a good case, but he will not be surprised to meet with disagreement. He himself implies that reaction pattern is dependent upon interpretation of environment, and obviously the educator must see that this takes account of the tragedies, futilities, and pathos of war, as well as of its possible triumphs. Does the commemoration ceremony by the Cenotaph at Whitehall on November 11th each year excite to war ?

A summary of the various meanings attached to the term " Social force " brings out one of the difficulties in this branch of study ; so far it would appear that students profess to " explain " one situation by another which is by no means itself understood. Professor Sprowls has herein a strong case for a scientific approach to social psychology. But while many other investigators have put forward " group mind " theories, now mostly discredited, it does not seem to be any more scientific and less hypothetical to advance a " stimulus response " principle on the ground that it can be applied successfully to any psychological fact, so that if " the thing of prime importance is to start with facts instead of metaphysics " (p. 251) there is set up an apparent contradiction in terms, confusing to the reader, and spoiling a treatise which for width of survey is not surpassed by any other of the size of the present volume.

The author carries on the " pattern " hypothesis to the explanation of cultures. Personal philosophies are the result of contacts with social environments and tend to achievements of characteristic kind. Although the South

Sea Bubble affords good illustrations of the tendency to realize personal ambition, the interpretation is not convincing; furthermore, other reasons than those the author suggests might be advanced to account for the "millennial hope." The analyses do, however, give food for thought, and are valuable to that extent if no further.

The "laws" of social psychology are inexact and do not state universal relations so far, but there is great hope for advance, though in all probability a knowledge of laws will never ensure prediction of results owing to the complicated and different environments in which they operate. The author thinks that, even in the face of this, headway can be made by carrying out differential study of social situations.

The volume makes a useful survey of the views of many different individuals and schools of thought. Professor Sprowls sketches a definite line of approach for the further study of a "science" which is by no means exact; in fact, his own word "inchoate" describes its present condition; those who read this work will gain much. The ideas do not always emerge from the printed word with readiness; one wishes for less complex sentences and fewer split infinitives, but a student would soon learn to ignore these defects and would then find this book, with its valuable bibliography, of much assistance to him in his studies. It is to be deplored that the price is hardly such as to make it possible for the volume to become the private possession of a large number of readers. A.P.B.

Character and the Conduct of Life: by William McDougall. (Methuen and Co. Pp. xiii+288. 10s. 6d. net.)

An Oxford tutor whom I once asked whether he read the books of J. D. H. Cole replied that he did, but that he could not read them quite so fast as Cole could write them. A reader who is a devoted student of McDougall and thinks that any one of his books is worthy of careful and repeated study is apt to feel somewhat the same, even though he gives a ready welcome to this—McDougall's twelfth book—a "Practical Psychology for Everyman."

The book, while not assuming a knowledge of the bases of McDougall's psychology as expounded in the "Social Psychology," and the "Outlines," sets forth briefly these main foundations so far as innate tendencies are concerned, and then proceeds at once to consider how they can be modified and co-ordinated into a worthy character.

McDougall's view as to the "common stock of energy," and his theory as to the "drainage of energy," involve the corollary that, if one tendency is allowed undue liberty, it will starve the rest.

Control may be secured by three methods: (1) The avoidance of circumstances which evoke this excessive tendency; (2) the inhibition of the impulse either by direct action of the will or by diversion of attention through the intervention of the intellect; and (3) by the due use of laughter and ridicule on the part of others, an influence to which McDougall gives more than usual weight.

To those who fear the effect of repression in inhibition he points out that Freud himself recognizes that "repression is civilization," and that it is rather the refusal to recognize the existence of wrong impulses that constitutes repression of the harmful kind.

For the encouragement of weak tendencies he falls back upon the principle of the "contagion of emotional impulses," functioning through suggestion and imitation.

As to these two main lines of training I would only raise the question as to whether fear, for example, may not in the long run be lessened by accustoming to slight stimulations, if these are followed by no evil results, and whether in other cases there is not more truth than McDougall's view under

(1) above would seem to allow for in the opinion that to keep a youth in cotton-wool and free from all temptation along the lines of his special weakness may not lead to a greater outburst later on when the careful guarding is removed. This, however, would be no criticism of McDougall's view, so far as the avoidance of the stimulation is self-imposed.

McDougall deals with the main types of temperament, extrovert and introvert, in a brief but masterly way, and then proceeds to discuss the essentials of character. Here his main thesis is that the highest character is not attained by the dominance of *any* instinct or sentiment, but only by the dominance of a suitable one, that of self-respect, less liable, he maintains, to one-sidedness and fanatical exaggeration.

A full discussion of this problem involves one, of course, in ethics, and it is hardly fair to complain, as some reviewers of this book have done, that the scheme is left incomplete. A more legitimate criticism, as it seems to me, from a psychological point of view, and one that the author is aware of, is that the sentiment of self-respect is, like others, liable to abnormal development in some cases, leading to an obsessive devotion to the development of one's own character as the main end.

The legitimate line of reply to this criticism would seem to me to be that the ideal self must be found in seeking objective ends, with constant reference to the ideal of self as a means of checking and balancing these.

The later parts of the book deal with many topics of great interest, not only to the educator but to the general reader. For example, there are discussions on the relations of parents and children, of wives and husbands, and chapters addressed especially to young people, which contain frequent relating of advice and suggestion to psychological bases. Some of the paragraphs addressed to women and girls are open to criticism from the point of view of the woman who definitely chooses a career other than marriage.

We have only room, however, to comment upon two or three other points of special interest to teachers.

As to discipline and drudgery McDougall, while asserting that hard work is necessary, says that work done for the sake of rewards and power only strengthens ambition. It should be done for the sake of knowledge and the development of character. But should we not regard such motives in the case of young children as savouring of the priggish ?

As a means of developing character and will McDougall admits the possible influence of deliberate exercise of will for its own sake ; but lays much more stress on the fact, as he maintains, that every time high influence determines conduct its influence is strengthened. I would raise the query whether this is necessarily so when such conduct appears to the agent himself to result in undesirable, unanticipated effects.

Enough has been said, however, to show that the book deals with topics of vital interest to those interested in education, and helps to fill the gap between theoretical psychology and the practical conduct of everyday life.

C.W.V.

Mental Tests : by F. N. Freeman, Ph.D., Professor of Educational Psychology in the University of Chicago. (G. G. Harrap and Co., Ltd. Pp. 503. 8s. 6d. net.)

In this book the author gives an excellent account of the problems which are involved in the design, application, and interpretation of mental tests.

In the earlier chapters the historical approach is adopted, the author describing the investigations of such pioneers as Galton in this country, Cattell and Wissler at Columbia University, Binet, and Ebbinghaus, and showing that their negative results judged by comparison with other measurements of achievement led to a temporary lack of interest in mental tests by professional psychologists. Advance to more precise methods of standardizing tests and of calculating results is attributed by the author largely to the work of Professor Spearman, which stimulated a number of intensive studies of tests, of which the first and one of the most careful was made by Cyril Burt in 1909.

In Chapter IV an account is given of the development of age scales from the 1905 Binet Scale, with its modifications in 1908 and 1911, and the various revisions by Goddard and Kuhlmann, to the Stanford revision, the most widely used of age scales. In this chapter is given also an account of the development of the intelligence quotient idea.

In Chapter V the author distinguishes a third line of investigation—that of group tests, the tests being chosen not because of their correlation with one another or because they showed marked progress with age, but because they were thought to measure specific mental traits. He describes in detail the Healy Fernald group test, and more briefly a number of others, including profile tests, which depend upon the previous development and standardization of specialized tests.

Chapter VI traces the development of point scales, instancing the Yerkes, the Herring revision of the Binet tests, and the Army Scales Alpha and Beta.

In Chapter VII are discussed the main facts concerning the recent development of group point scales available for use in schools, and the criteria which should be kept in mind in the choice of a scale. The chief facts concerning some thirty-six of the existing tests are tabulated, including references to the titles, authors, publishers, and published accounts of them.

An account is given in the next chapter of attempts to measure traits other than intellectual—will temperament, emotional tone, moral attitude, and æsthetic sensibility; Professor Freeman points out the necessity for great caution in the interpretation of the results of these tests.

Chapters IX, X, and XI are devoted to a critical examination of the technique and theory of mental tests, the main topics being the subject matter of tests, the selection and organization of the items of tests, and problems relating to scores and norms.

An excellent chapter for teachers on the tabulation of test results follows.

In Chapter XIII various important problems as to the nature of mental growth are critically discussed, the author advancing reasons for believing that mental growth continues beyond the age of sixteen.

Chapter XIV is concerned with the educational uses of tests, while in Chapter XV the types of application of mental tests to vocational guidance and selection are summarized.

Chapter XVI discusses the relation of intelligence to delinquency.

The final chapters are devoted to a discussion of the different interpretations of the results obtained and of the nature of intelligence. The author concludes that " intelligence tests have made a marked advance toward the measurement of native capacity, but their scores are still influenced to a considerable extent by the effects of training," that " the evidence favours the notion that intelligence rests upon some more or less unitary factor," and that " degrees of intelligence are determined by the general capacity of the psycho-physical organism for the formation of new patterns among the elements of experience."

From this brief account it will be seen that the book is a valuable contribution to the literature on the subject giving a comprehensive and critical account of the work of some hundreds of investigations. Through this mass of detail the author has not lost sight of the main threads and in his treatment of controversial questions his balanced judgment is noteworthy.

One omission may be mentioned, the absence of references to tests of intelligence for very young children. It may be that lack of space prevented the author from referring to the experimental work of Dr. Gesell. A.E.C.

Education for a Changing Civilization : by W. H. Kilpatrick. (The Macmillan Co. 1926. Pp. 143. 4s. 6d. net.)

This book contains the substance of three lectures delivered by Professor Kilpatrick at Rutger's University in 1926. Together they form a plea for new methods in education to meet the rapidly-changing scenes of our disquieted civilization. The analysis of the present ever-shifting stage is shrewd and sympathetic. Never before have the energies of man set in such swift and unceasing motion the wheels of change. The aeroplane is rapidly solving not merely questions of transport and of communication, but probably also of international friendships and barriers. The conquest of the air brings other nations to our doors and breaks down the cramping obstacles of frontier guards. Similarly, the wireless is not only creating a new " listening " public, but it must in time alter very considerably our attitude towards adult education. The doom which the inventing of printing presaged for the formal lecture as the only means of learning has advanced much nearer with the advent of the wireless, and both, even now, may be heralding the dawn of a new method of university teaching, a method applicable to adult as well as to juvenile listeners. But these are dreams which Professor Kilpatrick does not portray. His problem is the ever-present one of fitting our education to this changing life.

The proposed reforms are now almost commonplaces. They are the creation of " schools of life, of actual experiencing." Schools where pupils must be active with an activity which is purposeful and individual and in them teachers, also alive, purposeful, possessed of a knowledge of childhood and of social implications ; teachers who will link the school with the community it serves, so that when the pupils leave the one they will enter into the other ready to take up their duties as free and useful members.

All this is true, of course. Our education must be adaptable. " The school," wrote Grundvig, " which is merely a place of learning is a place of death." As Professor Kilpatrick has written elsewhere, the school of 1850, or even of 1870, looked out on a world not much changed from that of 1800, and could almost be assured that the same content of education would suit the one as it had suited the other. But the world of 1925 is a very different one from that of 1900 or even of 1918, and the future is pregnant with possibilities. Thus to demand adaptability, freedom is simple, even popular. Yet there is considerable danger that in so doing we shall lose much of what is valuable, nay, essential to life. The school has to prepare for the future, or better, perhaps, to give facilities for the present life. But it has also to preserve the past and to hand it on untarnished. Faced with this task, the school may still find it possible to work for " that freedom for each to conduct life's adventure in his own way." But the freedom must never degenerate into licence or even sentimentalism. The school will give full scope for individuality, and it will also " socialize its pupils," and, in socializing, discipline them in the higher walks of life. It is this latter aim which modern experiments in education sometimes seem to obscure. Professor Kilpatrick has given us an interesting and suggestive book which is well worth reading. S.H.W.

The Self-Directed School : by Harry L. Miller and Richard T. Hargreaves. (Charles Scribner's Sons, New York and London, 1927. Pp. 412. 7s. 6d.)

" The Self-Directed School " is concerned with the problem of producing " self-active, responsible, socially-minded individuals who can be trusted with power." The authors, two experienced and successful teachers, expound at length a scheme which has two guiding principles, viz. : the administration of education in the interests of the pupils, and a reorganization of studies in the light of educational psychology and social needs. The treatment is interesting and valuable, for it combines much practical advice on teaching technique with sound thinking on educational theory.

Their indictment of the present high school system of education in America (the general charge is true of the English system) is that pupils are trained to learn rather than think. Whereas the urgent need is for an increasing number of inquiring minds, the schools turn out complacent, passive minds. School organization and method account for this, because they have never emphasized the need of " creative thinking." The following quotation gives the point of view clearly : " If pupils are actively enlisted in the task of educating themselves then that school is a new school—no matter how old it may be ; and if the pupils are passively waiting for someone to come and "learn" them, then that school is an old one, no matter how new it may consider itself to be." If, further, the pupils become active partners in the work of adapting the curriculum to meet their own needs, then school work will have significance and reality, and will link itself to those other activities which shape individual development. The problems raised in this section on curriculum-thinking and building are many and important. The discussion really centres around the need for reconciling the demand for unity and the demand for variety. Six major fields of study are suggested, viz. : English, foreign languages, mathematics, science, history, and constructive arts ; and the claims of each, in relation to the whole programme of studies, are well discussed. The claims of vocation and of humanism in the education of the adolescent are also well analysed. But much of the advocacy is already familiar to students of English education through Mr. Tawney's " Secondary Education for All," and Professor Dover Wilson's " Humanism in the Continuation School."

Other problems are stated and challenging questions asked in this interesting educational treatise, e.g., the increasing use of psychological tests and their validity for vocational guidance and for determining which pupils are able to profit from advanced instruction. Above all, the authors show, in a significant way, the tendencies of educational thought in America at the present time. The data and the outlook of the book are naturally American. And so is the language and unattractive style. The Oxford English Dictionary and Fowler's " Modern English Usage " may be searched in vain for some of the constructions used. The use of metaphorical language drawn from modern inventions does not always result in clarity of thought, e.g., what is the exact meaning of "A creative sharing of the new fundamental social arts, all geared-up in new transmissions ahead," or " For some who do not tune-in on algebra " ?

I.J.

Psychologies of 1925. (Humphrey Milford. Pp. 412. 28s. net.)

This is a second edition, with very few alterations, chiefly typographical, so that a lengthy review is not called for. We should like to say, however, how glad we are that the Editor, Dr. Carl Murchison, has not allowed the volume to go out of print ; and for the sake of those who missed earlier reviews we may add that the volume consists of a series of lectures (the Powel Lectures at Clark University) designed to give an account of typical schools of present day psychology. Behaviourism is represented chiefly by J. B. Watson, who is vigorously trounced later on by William McDougall in two lectures entitled " Men or Robots ", and by Morton Prince. R. S. Wood~~ward~~ deals with Worth " Dynamic Psychology." Koffka and Köhler contribute papers on the *Gestalt* theory ; concluding sections deal with Reaction Psychology (by Knight Dunlap) and Structural Psychology (by Madison Bentley).

C.W.V.

The Law Within: by Sir Bampfylde Fuller, K.C.S.I., C.I.E. (Kegan Paul, Trench, Trubner and Co. Pp. 295. 12s. 6d. net.)

This book is an attempt to found, or at least to attract attention to, what purports to be a new science. It is, as the author writes, " mainly concerned with the living energies of motive emotion and thought which intervene between the stimuli to which we are subject and our behaviour in response to their stimulation." To this new science the author gives the name of biothymology. It differs much from psychology, for the latter " has closed its eyes to the avenues that lead to truth." It has ignored evolution and its laws, it has erred in taking too " objective " a view of life, and it has come short of the ideal in that it has stressed too much the " measurable relations with the outside world through sensation and behaviour, whereas the causes or motives of our various activities are nervous conditions that are within us and can only be detected by self observation." The purpose of the book, then, is to bring these living energies within the domain of law by tracing them back to their simplest manifestations. So the first part of the book is concerned with the simplest form of these activities, with nervous origins and with the laws of their operation. Other sections deal with sensation and thought, with behaviour and the last section with experience and education. In this last section there are observations of value. The author has noted, for example, that the public school boy can be more generally depended upon for discipline and determination, though he may yield to the non-public school boy in intelligence and initiative. The author's final conclusion is that " reasoning, while owing its materials to the teaching of experience, is not improved—may indeed be impaired—by the experience of being taught at school." It is difficult to criticize a book of this nature, for it bristles with difficulties and assumptions which make it almost impossible to treat it fairly. The author states with a pathetic frankness that he has written several books on the laws underlying human nature which have received but scant attention, not apparently without some reason, for, as he states, he has at times been " misled by what seemed to be landmarks—the only escape from which is through a wilderness of words." And with that, perhaps, we may leave the book to the judgment of its readers.

S.H.W.

Nine Essays: by Arthur Platt; with a Preface by A. E. Housman. (Cambridge University Press. Pp. xviii+220. 8s. 6d. net.)

Although the essays in this book are interesting and agreeable to the general reader, they have a more intimate appeal to those whose fortune it was to study under their author and the writer of the Preface. In reading many of them one can hear Professor Platt's voice as he delivered them to the College Literary Society—that " Minotaur," as Professor Housman calls it, which " does not devour youths and maidens: it consists of them, and it preys for choice on the Professors within its reach." The professors on whom chiefly it battened (in my time) were Platt, Housman, and Ker; and there should be two slim volumes to accompany this. Of the nine papers here printed, five are on classical topics—one of them, Platt's " Cambridge Prelection " on a crucial passage of the " Phædo "; the others deal with Fitzgerald, La Rochefoucauld, Cervantes, and the Relations of Poetry and Science. All are full of learning, of acute but untechnical psychology, and of that genial humour which one remembers as Professor Platt's unfailing characteristic. However bad one's Greek prose might be, he would find some loop-hole for encouragement; whereas one's Latin prose evoked the full pessimism of the Shropshire Lad.

Professor Housman's Preface (it is superfluous to say) is as gem-like, as perfect in its kind, as his poems or his prefaces to Juvenal and Manilius.

It gives in a few pages an idea of Platt's scholarship, his love of animals, his interest in science, and the apparent levity which caused him to be rated below his deserts. " His happy and useful life is over " (it concludes), " and now begins the steady encroachment of oblivion, as those who remember him are in their turn summoned away. This record will not preserve, perhaps none could preserve, more than an indistinct and lifeless image of the friend who is lost to us : good, kind, bright, unselfish, and as honest as the day; versatile without shallowness, accomplished without ostentation, a treasury of hidden knowledge which only accident brought to light, but which accident brought to light perpetually, and which astonished us so often that astonishment lost its nature, and we should have wondered more if wonders had failed. Yet what most eludes description is not the excellence of his gifts, but the singularity of his essential being, his utter unlikeness to any other creature in the world." F.A.C.

The Inglis Lecture, 1927 : " Do Americans really value Education ? " : by Abraham Flexner. (Harvard University Press ; Oxford University Press. Pp. 49. 4s. 6d.)

This is the third annual lecture provided by the Inglis Fund at Harvard University on the subject of Secondary Education.

Probably tired of purely academic and administrative matters, the lecturer devotes himself to a consideration of American opinion about advanced education. He doubts whether, apart from a belief in the diffusion of some kind of educational opportunity, America values real scholarship and the capacity for sustained, disinterested intellectual effort. He suggests two tests, and concludes that " a nation that really valued education would . . . in the first place, esteem scholarship, and in the second place, would seek somewhere and somehow to produce and maintain conditions favourable to scholarship." A plea is made for better salaries and conditions for all who teach or pursue research. The rewards for academic work are considered meagre in comparison with other important activities, and difficulty is anticipated of getting good men and first-class work as a result of false economy.

This aspect of American education has been stressed before. Lately, it is significant that Dr. Edwin Dellar, in his interesting "Impressions" of American Universities, has partly accounted for the condition of American higher education by the fact that " the teachers are worse paid than the English teachers, if regard be had to the cost of living in both countries."

I.J.

Principles of Secondary Education : by L. A. Williams and G. A. Rice. (Ginn. Pp. xi+339. 8s. 6d. net.)

This book by the Professor of Education in the University of California and a member of his staff attempts to give " a wide, sweeping, telescopic view of secondary education " in the United States. A benighted citizen of the Old World where " citizens are to obey laws . . . not to make them," where " education for the masses is not necessary," and only those who rule need higher education, is perhaps presumptuous in hazarding an opinion on the success of the attempt. He can only say that the functional education which the authors preach is very like the education which most English books on the subject recommend, and which good schools are giving, even in this class-ridden country. On the other hand, he has read with interest and profit the chapters which deal with the " measurement " of high school pupils and with the important schemes for the re-organization of secondary and higher education now taking shape in the United States. There are also many useful references to American educational publications.

The book is well arranged and clearly written, and its account of American conditions will help English readers to free themselves from the insularity of thought on education which unfortunately persists in this and most other countries, and of which some chapters in the book itself furnish almost comical examples. H.B.S.

Psychological Analysis of the Fundamentals of Arithmetic : by Charles Hubbard Judd. (Supplementary Educational Monographs, University of Chicago. Pp. x+122. $1.00 post paid.)

A work that should be of high suggestive value to teachers of mathematics, who are reminded that pupils encounter difficulties in understanding facts about number which are " often not recognized." A preliminary account of the idea of number with a few experiments which may well be repeated by the reader for his own good, is succeeded by accounts of experiments performed upon adults and upon children. Several interesting results are obtained ; some are already well known, others are less so ; long series of impressions are more difficult to count than short ; the reason for this difficulty being more marked beyond " ten " is investigated. A group of ten is itself difficult to apprehend and it is not possible to differentiate between, say, thirty things all alike and thirty-one, whereas grouping assists discrimination, and so forth ; the author deals with many points. An interesting survey of reasons for the difficulties is made. The monograph concludes with a chapter summarizing the psychology that emerges from the investigations described.

Guidance of Childhood and Youth : Readings in Child Study : compiled by the Child Association of America. Edited by B. J. Gruenberg. (The Macmillan Co., New York. Pp. 324. 6s. 6d. net.)

This book is a companion volume to " The Outlines of Child Study," published by the Federation of Child Study. It consists of a series of extracts from the works of recognized authorities in educational questions, and is intended to provide guidance for parents and others upon the main lines of educational thought. The topics are divided into four—viz., " Impulses and Activities," " The Social Environment," " Organic Foundations," and " Individual Variations." The sub-divisions are necessarily arbitrary, and therefore somewhat misleading. The extracts under the " Social Environment " include, for example, the " Use of Money," " Collecting Clubs and Gangs," " Books," " Nature," and " Co-education." No space is given to the home, the school, or even the use of clothes. The extracts have, on the whole, been well chosen. If they lead parents to wider reading and to a more intelligent attitude towards not only their own but other children the book will have been worth the trouble spent on it. S.H.W.

The High School Principal as Administrator : by Alexander Crippen Roberts, Professor of Education in the University of Washington, and Edgar Marian Draper, Assistant Professor of Education in the University of Washington. (London : George G. Harrap and Co. Pp. xxii+335. 7s. 6d.)

This book, which makes a study of educational problems from a somewhat unusual angle, deserves attention from the English reader. It gives in detail the results of an elaborate enquiry into the ideal qualities, the training, professional status and multifarious duties of the American High School Principal, whose position, roughly, but not entirely, corresponds to that of the head master of a modern secondary school in England. His duties are classified as administrative, supervisory, " extra-curricular " (a fine, comprehensive American coinage !) and professional. The conclusion is reached that most principals have to spend an unnecessarily large proportion of their time and energy in detail work, which prevents them from performing work of a constructive kind. The writers' conclusion is worth quoting (page 323): "The principal is entitled to competent clerical assistance and every time-saving device."

Unless the reader is familiar not only with the detailed organization of the American High School, but also with the whole American "scene," he is likely at frequent intervals to become lost in a thicket of technical details, couched in a vocabulary absolutely unintelligible to English ears. Apart from this inherent defect, the book is full of vital matter, and one realizes that in America the fundamental problems of secondary education are identical with those which the educationist in England has to face. Some of those touched on are the function of a secondary school in modern society, alternative courses in the curriculum, the place of sports, the value of school societies, and the methods by which pupils may be given a measure of self-government. In connection with the curriculum, the State of Washington is quoted as having "eight alternative courses in its high schools, only two of which are university preparatory courses." The need for sports and other varied school societies involving self-government is associated with Professor Dewey's dictum that "Secondary education is neither a preparation for college, nor a preparation for life"; so far as the adolescent is concerned, it is and ought to be "life itself."

The problems dealt with are analysed with characteristic American thoroughness of tabulation, and the authors indicate their belief that only when universities and training colleges establish courses to train the more capable and ambitious entrants to the teaching profession, not merely in the principles of their art, but also in principles of sound administration, supervision, and leadership, will there be a reasonable hope of the secondary school solving its problems and fulfilling adequately the function which it is destined ultimately to perform in the modern industrial state.

An interesting feature of the book is the inclusion at the end of each chapter of problems of conduct such as daily confront the educational supervisor and administrator in his relations with pupils, teachers, parents, and general public.

The American faith in education is the dominant note of the book, which should prove a wholesome tonic for educational pessimists at home.

H.P.L.

What shall the Public Schools do for the Feeble-minded ? : by Guy Pratt Davis. Harvard Studies in Education, Vol. X. (Harvard University Press and Oxford University Press. 1927. 8vo. Pp. 225. 15s. net.)

Somewhere in one of his books Victor Hugo observes: "An institution can never be greater than its institutors." This is undoubtedly true, but there is a complementary truth that the success and reputation of an institution reflects in great measure the character of its chief administrative officer. Those of us who were privileged to know the late Dr. Walter Fernald, and to see his extraordinarily fertile work at the Massachusetts School for the Feeble-minded, can readily understand the feeling that this institution will be the enduring monument to his genius, and that his memory will be happily enshrined in the change of name to "The Walter Fernald State School."

This book is the outcome of a study of the problems and procedures for their solution which were instituted at the school during Dr. Fernald's superintendence by Professor Guy Davis, of the State Teachers' College, Pennsylvania, and so far as it is a description of the methods employed it will be found to be useful to teachers. As a whole, however, the book is disappointing, and could have been reduced to half the present size, with a corresponding reduction in the price, without any sacrifice of material. It gives the impression that it has been written by a theorist with no really intimate acquaintance with the feeble-minded or with special schools. The theoretical suggestions on sense training do not appear to be based upon soundly scientific principles, while to supply all the articles which are enumerated in his list of object lesson materials (Appendix i) would convert a special school into a lumber-room. It must, however, be understood that the conditions within the boundaries of a residential institution, such as Waverley, are very different from those which pertain in a day special school for the feeble-minded, and from the figures which Professor Davis gives it is clear that he includes in his group " the feeble-minded," many who in England would be included in the " dull and backward " category. However, for all such children Dr. Fernald's dictum is true : " Let him achieve success every day. His bad behaviour is largely his attempt to compensate for a feeling of inferiority from repeated failures. His social attitude and behaviour largely express his clumsy attempts to keep his own self-respect ; in other words, a simple defence reaction." When all is said and done it remains true for the feeble-minded as for his more quick-witted comrade, *non scholæ, sed vitæ discimus*, and his capacity for self-adaptation to his social environment will be the measure of the success or failure of his upbringing. Professor Davis looks to legislation as a means of combatting the problem of feeble-mindedness by insuring a complete scheme of ascertainment, and the initiation of mental clinics with adequate State aid.

The lack of an index is a drawback to the book, and is not compensated by the elaborate table of contents. G.A.A.

The Teaching of Junior High School Mathematics : by D. E. Smith and W. D. Reeve, Professors in Teachers' College, Columbia University. (Ginn and Co. Pp. viii+411. (8s. 6d.)

This detailed discussion of the teaching of arithmetic, elementary algebra, and geometry, although primarily intended for teachers in the United States, loses none of its force when applied to the work done with boys and girls of twelve to fifteen years of age in the upper classes of elementary schools, in central schools, and in the middle forms of secondary schools in England. The only features likely to remind the reader of an American setting are an occasional variation in spelling, and a degree of thoroughness so far lacking in English text-books of this type (with the sole exception of Nunn's Algebra). Each chapter concludes with an exhaustive bibliography, and while, naturally, English writers are in a minority, yet nothing of any importance written on this side fails to get due notice, and the writers show an intimate acquaintance with the work of our own Mathematical Association. The occasional references to teaching in England give the impression that in visiting our schools the writers, one or both, have been fortunate in what they have seen. For example, blackboard work, in the majority of our schools, must be quite as often used to the detriment of real teaching as it is in any other country, and the small blackboard merely means the over-worked duster.

Each chapter, while thorough, is also provocative, and the essay titles are most stimulating. For instance, on the topic, " Mathematics in relation to health," the first heading suggested is " Graphs of Temperature . . ." But how would the authors mark an essay that took quite another line, and began : " Mathematics takes the mind away from self . . ." ? In America, apparently, they still say " model lesson " when they mean " discussion lesson," and the lessons given in Chapter X are excellent specimens if wrangling is the object of such lessons. " A fourth dimension surgeon would be able to see how much money his patient had in his pocket." This means nothing to me, but as a matter of experience it is easy to give the average boy or girl of fourteen an introduction to " fourth dimension " by suspending a thermometer, for example, at a point in the room whose distance from the floor and from each of two perpendicular walls is known, using a watch to give the fourth dimension, namely, the instant at which the temperature was taken. The omission of " logarithms " from the curriculum in arithmetic will not meet with the approval of the majority of the teachers of arithmetic in this country. In connection with the revised " suggestions " and the report on the teaching of the adolescent, the appearance of this text-book is specially opportune, and will be welcomed by all engaged in the training of teachers, whether specialists in mathematics or interested in the curriculum as a whole.

H.E.J.C.

Physical Training, Games, and Athletics in Elementary Schools : by M. B. Davies. (George Allen and Unwin, Ltd. Pp. 288. 6s.)

This book, dealing with theoretical and practical aspects of physical education, should be in the possession of all elementary school teachers, and, one might add, in the possession of all gymnastic teachers in secondary schools. It is, of course, primarily a book for the former; as the author states in the preface: " The problems of the elementary school are different from those of other work because most classes are taken out of doors and without fixed apparatus." Even with this difference there are many problems discussed which are common both to the elementary and secondary school teacher. Chapter VII. on teaching technique, is an illustration of this. The book is worth possessing for this chapter alone, and also, perhaps, for the splendid list of reference books given at the end, which the reader will be stimulated to obtain and read more fully in their bearing on physical education. Particularly useful are the chapters dealing with the organization of games, sports, dancing, and swimming. The values and dangers of competition are put before the reader clearly ; great stress is laid on the attitude of the teacher in cultivating the right spirit in competition.

In another part of the preface the author says : " Views have been expressed somewhat forcefully as making for clearness and stimulation of thought." This, on reading the book, is found to be true, but the author achieves her (or his) end in promoting stimulation of thought in the reader. On this account the book is not only a valuable one for the young teacher alone, but is also one that an older teacher should have for constant reference and that " stimulation of thought " in technique and method of teaching.

M.E.H.

Procrustes, or the Future of English Education : by M. Alderton Pink.
Rusticus, or the Future of the Countryside : by Martin S. Briggs.
(Kegan Paul. 2s. 6d. net each.)

" Procrustes " continues the skill of the " To-day and To-morrow " Series in finding illuminating titles. The earlier chapters deal with the educational rack which seeks to standardize all types of mind ; the improvements suggested largely resemble the recommendations of the Hadow Report. A final chapter on the universities provides very shrewd criticism of " the academic mind of to-day and to-morrow."

Confining himself to the modern University foundations, Mr. Pink finds their worst faults in : (1) the lack of social life and of games for a large number of students ; (2) the lecturing system ; and (3) the incubus of research. Nobody can deny that these are evils. The Board of Education is endeavouring (though its influence on university institutions is indirect and unofficial) to remedy the first, by encouraging voluntary physical training. The volume of breath expired in lecture rooms is due mainly (as Mr. Bertrand

Russell has pointed out) to the business members of governing bodies, who measure a university teacher's activity by the number of lectures he gives per week ; and, while the proportion of students to staff results in classes of 50-100, it is impossible to avoid the mass methods of lecturing. That outgrowth of science known as " Research " has now infected the humaner letters to the exclusion of liberal education. " Newman, thou shouldst be living . . . " But Mr. Pink argues reasonably that research will dig its own grave by the time that it has exhausted all possible material.

Mr. Briggs writes cogently and humorously of the ravages on the beauty of the countryside wrought in the coal and petrol ages. His historical survey shows a sincere (if unacknowledged) flattery of Mr. Trevelyan's " British History in the Nineteenth Century " ; but in his enthusiam for the decencies and amenities of the English countryside he emphasizes a most important side of education. " Untidiness, ugliness, lack of respect for history and beauty, an insane craze for speed in getting from one futile pursuit to another, blatant advertisement, sordid commercialism—these are some of the things we have borrowed from American life to vulgarize our own . . . It is simply heartbreaking to those of us who know how future uglification may be avoided and how much of the blundering of the past may be remedied, to see the process of deterioration steadily continuing. With more of brains and less of greed, more of public spirit and less of vested interests, rural England may yet be saved." F.A.C.

Ordinary Differential Equations : by E. L. Ince. (Longmans. Pp. viii+558. 36s. net.)

This comprehensive work by the Professor of Mathematics in the Egyptian University seeks to weld together the " classical theory " with that large development of new work which has been done in the last quarter of a century. It is a valuable book for the advanced student and the researcher, and particularly welcome from the hands of a pupil of Chrystal and E. T. Whittaker.

An Introduction to Chemistry : by C. G. Vernon. (G. G. Harrap and Co., London. Pp. 276. 4s. 6d.)

The chemistry master at Bedales School has written an attractive introduction to chemistry, dealing with the subject from the historical standpoint. Part I deals with theory and corresponding ; practical work is adequately dealt with in Part II.

The Making of a Chemical, a guide to works practice : by E. I. Lewis, M.A., B.Sc., and Geo. King, M.Sc., F.I.C. (Ernest Benn, Ltd., 1927. 12s. 6d. Pp. 288.)

This is an excellent book and is heartily recommended to all young chemists. It is a " Freshers' Guide " to the chemist entering an industrial works, and will also appeal to those in whose affairs scientific method plays, or should play, a part. Its strong interest in educational aspects is not surprising when we note that Mr. Lewis was formerly senior science master at Oundle School.

Primarily, however, the party addressed is the chemist, who, leaving his university or technical college, is anxious to adapt himself to the conditions of industrial life as quickly and as easily as possible. Up to this stage of his career he has had no reason to include in his equations factors representing cost of material, design of apparatus, and in particular vagaries of human nature ; the change of outlook is radical and difficult to accomplish, but it is an essential condition of success, as success is known. The chemist can turn with confidence to this book, however, for in it he will find a fund of good sense, expressed with a sympathetic understanding possible only to those with an intimate knowledge of the outlook of all grades from process worker to manager.

The authors describe the various stages of the evolution of a chemical product from the research laboratory to the large scale manufacturing plant; they point out the pitfalls to be avoided, and dwell with due emphasis on the all-important element of costs. The second part of the book is an outline of the methods and practice of chemical engineering; it is of an introductory nature, and could not be otherwise in a work of this scope. The uninitiated will find it a most useful guide, and for further study good bibliographical references are provided.

Certain chapters are written with a literary grace unusual in works of technical interest; errata are few and of small importance.

W.G.E.

Methods and Results in Arithmetic : by H. J. Larcombe. (London, Nisbet and Co., Ltd. Pp. 187+viii. 4s. 6d.)

Mr. Larcombe has given in this little book the results of a wide knowledge of schools and the methods of teaching adopted in many of them. "Herein will be found no abstruse methods, no deep theories, but just a simple and practical discussion of the subject by a practical teacher who has known his own difficulties, and, as an inspector, has watched the difficulties of others."

These words, from the writer's own preface, indicate the strength and the weakness of the book. Chapters deal with: "What is Wrong," "The Work of the Infant School," "The Organization for Arithmetic," "Dealing mainly with the work of Standards I and II," "The Middle Standards," "The Ordinary Syllabus of the Upper Standards," and "Mathematics in the Elementary School."

The book is written in a clear and easy way; one looks in vain either for educational or mathematical vision; and the evidence on which some of the rather dogmatic statements are based should be given. The later chapters suggest that the writer is not familiar with the mathematical work done in a very large number of primary schools to-day. The practice of summarizing each of the chapters is irritating to the reader and reminiscent of the days, one had hoped now departed never to return, of "writing down" to the assumed requirements of the persons for whom the book is written.

History of Manual and Industrial Education up to 1870 : by Charles Alpheus Bennett. (B. T. Batsford, London. Pp. 461. 16s.)

A very complete survey of the subject from early historic times, though naturally more stress has been laid upon the period wherein "theory" seems to have given a place to different forms of handwork; doing, constructing, drawing are advocated by sixteenth and seventeenth-century writers from Rabelais to Locke, but practical realization of various recommendations was but rarely attained; in the industrial schools of the eighteenth century practical work was the means of existence, and in no sense entered into the "curriculum" because of educative value as understood to-day. Mr. Bennett reviews the work of Pestalozzi, Fellenberg, Oberlin, Froebel, and Owen; then he takes the reader to America with the last named and tells something of New Harmony and the development of Pestalozzian ideals in the States. The Mechanics' Institutes movement is described, both as to its origin and fruition in England and America, and finally a long chapter is devoted to a discussion of the progress of art education in relation to industry.

The book is well illustrated, in many instances by copies of title pages of historic educational books, by facsimiles of woodcuts, and the illustrations in technical works of different periods. An interesting feature is the source material, of which there is a quantity at the end of each chapter. There are also comprehensive bibliographies and a chronological chart of ten pages enabling the reader to form a fairly clear idea of contemporary evolution of manual and industrial history in different countries.

The volume is well got up ; one or two typographic errors should be corrected in the next edition ; but the subject matter has been carefully compiled and set out in a form that makes a readable treatise, and one which should be of immense value to the student of educational history, especially if he be especially interested in the evolution of education in America. A.P.B.

Poems and Songs : a Short Anthology : edited by John Hawke. (Selwyn and Blount. Pp. xv+335. 6s. net.)

Mr. Hawke has had the courage to approach his work with an open mind, and to cut himself off from the preconceptions that beset most anthologists, that such a poem must be included, or more frequently that such a poem cannot be included. Not all will agree with him because his taste often favours things at the moment unfashionable. But the book has real utility, for in it we are able to see a poet or a period not only at the best but at the most typical. The volume is of reasonable size and capacity, and most agreeably printed and bound. J.L.B.

An Introduction to Psychology : by J. J. B. Morgan and A. R. Gilliland. (The Macmillan Co. Pp. 319+vii. 7s. net.)

In the Preface to this book the authors enter a strong plea for the teaching of psychology to students in the American high schools. The writers have therefore prepared this book to meet " the needs and interests of the younger reader." As a simple non-technical introduction to the subject the book is quite acceptable. Its sixteen chapters cover a wide field, most of them have an undoubted appeal to the young reader, examples are gathered from the affairs of the daily life of young people, each chapter is followed by a series of short questions, and there are references for further reading.

Liberalism and American Education in the Eighteenth Century : by Allen O. Hansen. (Macmillan Co., New York. Pp. xxv+317. 10s. 6d. net.)

The Declaration of Independence was one aspect of a new spirit of democracy that had been growing for some time in America. Thomas Paine, Richard Adams, Price, and John Adams did much by their writings, very concisely reviewed in this book, to establish the principles upon which a true democracy should be founded and to mould the thought which led to separation. But such democracy must not be based upon ideas imported from Europe ; peculiar conditions ruled in the States and must be met by a definite form of national education. Benjamin Rush, Robert Coram, James Sullivan, and Nathaniel Chipman contributed proposals of constructive nature as to the ends and means of education, as well as to the relation in which education should stand to the national life. In this volume a strong stress is laid upon the influence which the French had upon American procedure through the medium of the American Philosophical Society, whose membership was cosmopolitan in character and included many Frenchmen, even royalist refugees. But the practical contributions of S. Knox and S. H. Smith are of great interest, for they deal with economic as well as pedagogic aspects, and stress the importance of national education. Lafitte discussed the economic principles, and Noah Webster seems to have summed up all the essential ideas of a sound educational philosophy ; the States had a peculiar opportunity which ought to be exploited towards the perfectibility of its citizens and the formation of national character, but this could be only by considering educational as a national task.

Dr. Hansen has produced an interesting account, and the bibliography of thirty-two pages makes a valuable supplement to the numerous footnotes to the text. While one feels how much French thought influenced American activity in the eighteenth century, it is also due to the genius of the Americans themselves that ideals have been formulated and carried to fruition.

A.P.B.

Drawing, Design, and Craftwork : by Frederick J. Glass. Second Edition. (Batsford. Pp. xi+235. 12s.)

In the second edition of "Drawing, Design, and Craftwork" Mr. Glass has made additions of both text and illustrations to an already valuable book. The lay-out is attractive, the illustrations are in good line, and the general arrangement is more than satisfactory. In view of the dearth of sound books on art teaching it is very welcome. It should open fresh avenues of thought to the student, and will prove valuable to the teacher willing to accept Mr. Glass's suggestions for the improvement of his own individual method of teaching.

Modern Astronomy : its Rise and Progress : by Hector Macpherson. (Oxford University Press. Pp. 196. 6s. net.)

Dr. Macpherson was the Thomson Lecturer in Natural Science at Aberdeen United Free Church College in 1925-26, and this book owes its inception to these lectures. In ten lectures he deals with the moon, the sun, the planets, stars, nebulæ, cosmology, and cosmogony. Each chapter is an example of the art of condensed writing, but the whole book gives an excellent résumé of the subject, is thoroughly up to date, and is splendidly illustrated. A book to be enjoyed.

Chemistry : by W. H. Barrett. (Oxford, Clarendon Press. Pp. 151+viii. 5s. net.)

This is an addition to the well-known Clarendon Science Series, and well maintains the high standard that one associates with the series. The book is attractively produced and well written ; many topics from everyday life are introduced, upon which the author bases his scientific principles ; and throughout the book the student is made to feel that chemistry "is not already made, but is in the making."

Thermodynamics applied to Engineering : by Arthur F. Macconochie. (Longmans. Pp. xiv+260. 12s. 6d.)

The author of this work is admirably qualified for his task, being an Associate Professor of Engineering and a practical engineer himself. Theory and application are admirably blended and the main principles of dynamics are treated in a relatively simple way.

Illustrations of the Industrial Revolution. (British Institute of Adult Education. 7s. 6d.)

This portfolio of forty-seven cards contains forty-five large illustrations of interest to students of the industrial revolution. It should prove a useful supplement to lectures on the period.

SUMMARY OF ARTICLES IN OTHER JOURNALS.

International Journal of Ethics, Volume XXXVIII, No. 1, October, 1927. THE GREEK ORIGINS OF THE IDEA OF COSMOPOLITANISM : Hugh Harris. This article suggests that the beginnings of this idea are to be found in the early classical period of Greek thought. Four lines of thought are discussed : the poetic, Homer and Euripides ; the scientific, Hecatæus, Herodotus, and the Sophists ; the philosophical, Heracleitus, Empedocles, and Socrates ; and the religious, Orphism and the Pythagorean school. MORAL JUDGMENTS OF HIGH SCHOOL STUDENTS : A. C. Slavens and A. P. Brogan. Summarizes the judgments of high school pupils as to the grading of bad practices, compares their judgments with those of university students, considers that the discussion of moral education in high schools should be based upon objective studies of facts similar to those presented.

British Journal of Psychology, Volume XVIII, No. 1, July 1927. THREE ARTICLES ON THE RELEVANCE OF VISUAL IMAGERY TO THE PROCESS OF THINKING : T. H. Pear, F. Aveling, and F. C. Bartlett. Professor Pear emphasizes the various attributes of visual imagery and the range of individual differences possible. He suggests various ways in which visual imagery may function as a vehicle for thinking, though he admits that at some of the stages the visual image is disadvantageous for abstract thinking, and that imagery which is apparently irrelevant may not be so. Dr. Aveling maintains that thoughts may or may not be accompanied by imagery, that they remain unimpaired while the imagery tends to become fragmentary, obscure, and even to drop out of consciousness altogether, and that therefore images are not relevant to thought in the sense of being necessary to it, though they may be relevant as associated with it or illustrative of it. Mr. Bartlett suggests that it would be advisable to speak of three levels of thought, a pre-image level, an image level, and a post-image level ; he briefly discusses the nature and limitations of the three, maintaining that it is the thinking which determines whether or not the images which are utilized are relevant, never the images which determine the relevance of the thinking they may stimulate. CHILDREN'S APPRECIATION OF POETRY : Lynette Feasey. Gives an account of an experiment with 550 primary school children, each child being required to name the one poem most liked out of six recently studied, and, if possible, to give reason for preference. Shows the influence of the teacher as reflected in choices and in reasons. Reasons are classified and discussed. Some educational conclusions are suggested.

British Journal of Psychology, Volume XVIII, No. 2, October, 1927. LA PREMIÈRE ANNÉE DE L'ENFANT : J. Piaget. BRITISH NORMS FOR THE PRESSEY CROSS-OUT TEST : Mary Collins. A brief account of the Pressey Test for Character, giving the modifications used ; the results are analysed and suggests that the tests are not reliable as a test of any aspect of character, but that they may help as a guide to the emotional disturbance prevailing at the time at which the individual is examined. AN INVESTIGATION INTO THE COMPARATIVE INTELLIGENCE AND ATTAINMENTS OF JEWISH AND NON-JEWISH SCHOOL CHILDREN : Mary Davies and A. G. Hughes. Describes the results of giving the Northumberland Standardized Tests in General Intelligence, English, and Arithmetic to pupils of three schools, each of which contained a fairly equal proportion of Jewish and non-Jewish children, as far as possible these being in each school of similar social and economic status. The results showed a superiority in all three tests for the Jewish children of all ages tested (8—13). This " racial " difference was for boys at age ten about one year in intelligence and arithmetic and a year and a half in English, and for girls about a year in English and slightly less than a year in the other two tests.

PUBLICATIONS ALSO RECEIVED.

ENGLISH.

Coriolanus. (Longmans. Pp. xix+144. 1s. 9d.)

Othello. (Harrap. Pp. 167. 1s.)

King John. (Harrap. Pp. 131. 1s.)

Antony and Cleopatra. (Harrap. Pp. xxxviii+245.)

Progressive Exercises in Précis and General English : by Harries. (Christophers. Pp. 191. 2s. 6d.)

Science of Speech : by B. Dumville. (Cambridge University Press. Pp. xii+199. 4s.)

The Adventures of Deerslayer : with exercises by M. N. Haight. (Harrap. Pp. 168.)

Selections from English Dramatists : by G. H. Crump. (Harrap. Pp. 286. 2s. 6d.)

Twentieth Century Essays and Addresses : by W. A. J. Archbold. (Longmans. Pp. xvi+270. 3s. 6d.)

English Composition : by E. J. Kenny. (University of London Press. Pp. xi+244.)

HISTORY.

Days before History : by H. R. Hall. (Harrap. Pp. 158. 1s. 6d.)

The Adventure of Man : by F. C. Happold. (Christophers. Pp. 242. 3s.)

A Short History of Great Britain since 1714 : by R. B. Mowat. (Oxford University Press. Pp. 334. 3s. 6d.)

Outlines of British Social History : by E. H. Dance. (Longmans. Pp. xii+232. 3s.)

Martin Luther : by E. Ross. (Harrap. Pp. 191. 2s.)

Days and Ways of Early Man : by D. Davison. (Methuen. Pp. 127. 2s. 6d.)

GEOGRAPHY.

The Americas : by Leonard Brooks. (Univ. of London Press. Pp. xiii+234. 3s. 6d.)

A Complete School Geography, Vol. II : by E. G. R. Taylor. (Methuen. Pp. xi+434. 5s. 6d.)

Northward Ho ! : by Vilkjalmur Stefansson. (Harrap. Pp. 160. 2s. 3d.)

The British Empire : by A. Wilmore. (Bell. Pp. viii+183. 1s. 9d.)

The World : by J. Murray. (Bell. Pp. vii+192. 1s. 9d.)

LATIN.

Latin Lessons for Beginners : by J. C. Robertson and A. Carruthers. (Harrap. Pp. xxii+462. 3s. 6d.)

Selections from Virgil : by J. C. Robertson, J. S. Bennett, and D. A. Glassey. (Harrap. Pp. v+231. 2s. 8d.)

Livy : The Career of Scipio Africanus : Ed. by T. C. Weatherhead. (Cambridge University Press. Pp. xvi+173. 3s.)

FRENCH.

Le Livre de Mon Ami : by Anatole France. (Oxford University Press. Pp. 210. 2s.)

Le Roi des Montagnes : About. (Cambridge University Press. Pp. xii+377. 2s.)

Gens qui Passent : Marguerritte. (Oxford University Press. Pp. 171. 1s. 6d.)
Selections from Marcel Proust, with an Introduction and Notes by de V. Payen-Payne. (Oxford University Press. Pp. 104. 1s. 6d.)
Malficeli : Aime Rebald. (Harrap. Pp. 148. 2s.)
French Verbs Conjugated, Part II : by W. H. Fraser and T. Squair. (Harrap. Pp. 29. 6d.)
A Preface to Molière : by H. Ashton. (Longmans. Pp. xi+177. 7s. 6d.)
French of To-day : by H. N. Adair. (Sidgwick and Jackson. Pp. vi+268. 2s. 6d.)
French Prose of To-day : by de V. Payen-Payne and I. H. Clarke. (Sidgwick and Jackson. Pp. xvi+280. 3s. 6d.)

SCIENCE.

Essays of a Naturalist : by Sir Ray Lankester. (Methuen. Pp. 154. 1s. 6d.)

MATHEMATICS.

An Introduction to Practical Mathematics : by F. M. Saxelby. (Longmans. Pp. viii+232.)
The Elements of Plane Trigonometry : by J. T. Brown and A. Martin. (Harrap. Pp. 189. 3s. 6d.)
An Intermediate Arithmetic : by F. L. Grant and A. M. Hill. (Longmans. Pp. 266, 3s. 6d. ; with answers, 4s. 6d.)

MISCELLANEOUS.

The Conquest of the Air : by C. L. M. Brown. (Humphrey Milford. Pp. 126. 2s. 6d.)
In the Days of the Guilds : by L. Lamprey. (Harrap. Pp. 255. 2s. 6d.)
Descriptive Economics : by R. A. Lehfeldt. (Humphrey Milford. Pp. 112. 2s. 6d.)
Stepping Stones to Cricket, Football, and Hockey : by Donald MacCuaig. (Longmans. Pp. xii+53. 2s.)
The Little One's Log : by Eva, Viscountess Erleigh. (Partridge. Pp. 96. 7s. 6d.)
Advanced German Unseens : by C. E. Stockton. (Methuen. Pp. viii+64. 1s. 3d.)
Attic Life : by C. W. Baty. (Christophers. Pp. 78. 3s. 6d.)
Bournville Housing. (Bournville Works. Pp. 56. 6d.)
A Book of Nature Myths : by Florence Holbrook. (Harrap. Pp. 176.)
Everywoman a Nurse : by Edith Newsome. (Oxford University Press. Pp. xii+204. 3s. 6d.)
The Middlesex Book of Verse, with a Preface by Sir Benjamin Gott. (University of London Press. Pp. 168. 4s. 6d.)
Advanced Tests in German Composition and Grammar : by H. J. B. Wanstall. (Harrap. Pp. 78. 1s. 3d.)
The League of Nations and the World's Workers : by K. E. Innes. (Hogarth Press. Pp. 47. 1s. 6d.)
General Knowledge Papers : by R. W. Finn. (Christophers. Pp. 24. 9d.)
Boys and Girls of the Middle Ages : by Rhoda Power. **Special Talks to Secondary Schools. Speech and Language :** by A. Lloyd James. **Elementary Music :** by Sir Walford Davies. **Elementary French :** by E. M. Stephen. **Out-of-Doors :** by Eric Parker. (British Broadcasting Corporation Pamphlets.)

The Psalter Shortened : by A. G. Grenfell. (Cambridge University Press. Pp. vii+63. 3s.)

Business Economics : by Sir William Ashley. (Longmans. Pp. viii+71. 2s. 6d.)

An admirable survey by an acknowledged authority.

The Factory and Recreation. (Cadbury Bros., Bournville. Pp. 68. 6d.)

Bournville Housing. (Cadbury Bros., Bournville. Pp. 56. 6d.)

Social Organization at Small Factories. (Cadbury Bros., Bournville. Pp. 56. 6d.)

Association of Special Libraries and Information Bureaux, Record of Second Conference. (Pub. by Association. Pp. xv+206. 5s.)

Women of the Classics : by Mary C. Sturgeon. (Harrap. Pp. 256. 2s. 6d.)

Tune Book for Little Children's Hymnal : by S. E. Gadsby and D. S. Kirkness. (Harrap. Pp. 62. 5s.)

The Romance of the Cotton Industry in England : by L. S. Wood and A. Wilmore. (Oxford University Press. Pp. xv+288. 5s.)

Easy Latin Readings : by J. M. Milne. (Harrap. Pp. 77. 1s.)

Chapters from Everyday Doings of Insects : by Evelyn Cheesman.
Chivalry and Social Life in the Middle Ages : by Dorothy M. Stuart.
Episodes from the Sea and the Jungle : by H. M. Tomlinson.
Episodes from the Story of Mankind : by Hendrik van Loon.
Chapters in Natural History : by Henry B. Tristram.
Episodes from the Road to Timbuktu : by Lady Dorothy Mills.
Pioneers of Invention : by William and Stella Nida.
Dreamland in History : by H. D. M. Spence.
(Harrap and Co., Ltd. Pp. about 190. 1s. 6d. each volume.)

The last eight books are further volumes of an admirable series, well printed and tastefully bound To say the very least, they are excellent " appetisers " in the various subjects they deal with.

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Holism and Education.

By J. Sachs.

Our close proximity in time and place to the man and his work deprives us of the right perspective which is necessary for the true assessment of General Smuts's great book* ; this disability, however, in no way impairs our enjoyment of it, and indeed we find more joy in the wealth of its ideas and the charm of its style than in manipulating the measuring rod of the critic.

General Smuts's book has made a tremendous appeal to men in every walk of life. Philosophers, scientists, statesmen, and theologians have delved in its treasures and returned richly-laden with intellectual spoils, and we feel sure that a philosophy so minutely worked out and so universal in its applications cannot be without import to the educationist. Our education seems to be sorely in need of some unifying principle which should counter the growing disintegration which is the ransom of specialization. We all feel the need of a culture that will transcend the scrappy fragmentariness of the individual subjects which constitute the school curriculum, and the principle of Holism which General Smuts has elaborated may perhaps afford us a solution to our problem.

In the first perusal of Holism and Evolution we are impressed with the learning of its illustrious author. Holism and Evolution is no series of speculative lucubrations ; in reading it one feels the glow of the African sun and the vastness of this great sub-continent. The author never loses his firm grasp of realities, and though his idealism is often discounted by his matter-of-fact attitude, this realism constitutes the abiding value of the work.

Smuts's philosophy is merely the theoretical aspect of a life brimful of action ; it has stood the test of this life's experience and its final formulation never loses sight of the world of realities : "The reflections embodied in this work lie far removed from the busy and exciting scenes in which most of my life has been spent ; and yet both of them tend toward the same general conclusions."

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*" Holism and Evolution." (Macmillan, 1926.)

The educationist may thus note with interest and profit that this philosopher does not begin at the rule-end of the lesson, nor is the lesson complete. The final applications of his philosophy in its higher reaches give the author pause. The reason for this is the acid test of experience. " The Great War—with its infinite loss and suffering, its toll of untold lives, the shattering of great States and almost of civilization, the fearful waste of goodwill and sincere human ideals which followed the close of that vast tragedy—has been proof enough for our day and generation that we are yet far off the attainment of the ideal of a really Holistic universe."

The fundamental problem of Education is often formulated as a dilemma or an antimony between two conflicting and contradicting affirmations. In its moral aspect the conflict is between liberty and authority, freedom and discipline. The object of Education is to enhance Man's liberty and emancipate him from the thraldom of ignorance, and yet in its process he is shorn of that freedom which is his natural birth-right.

In its intellectual or cognitive aspect we again meet this dualism in the form of a mind and a subject-matter to which it has to be adjusted. The former is free spiritual activity, the latter is something concrete and material with definite sharp contours—a mass or substance alien in nature to the fluid stream of consciousness in which it has to be absorbed.

The problem has been solved by idealist philosophers by means of an identification of mind and matter and the reduction of Reality to a single principle. In its fundamental essence all that is, is Spirit, the material aspect which the external world assumes for us is only apparent ; in reality matter does not exist. Thus runs the burden of the idealist philosopher's song, but a chorus of protests has arisen in the philosophical camp against this facile monism. It is at this point that General Smuts's solution comes as an answer which is more feasible and more in conformity with the findings of Science than these speculations of the metaphysicians.

Smuts as an evolutionist rejects the doctrine of idealist philosophy and points to the fact that Mind is a comparatively recent arrival in the scheme of Evolution. " To view the ideal or spiritual element in the universe as the dominant factor is to ignore the fact that the universe was before ever the ideal or spiritual had appeared on the horizon ; that the ideal or spiritual is a new and indeed recent creation in the order of the universe, that it was not implicit in the beginnings and has not been reached by a process of unfolding ; but that from a real pre-existing order of things it has been creatively evolved as a new factor; and that its importance to-day should not be retrospectively antedated to a time when the world existed without it."

Yet, although Smuts pauses before the final synthesis of things and their reduction to one homogeneous Reality, he traces a synthetic tendency at work in the Universe; this tendency is an urge in matter, mind, and life alike towards the creation and development of wholes in the Universe. This principle, which he names Holism, is the connecting link between the disparate domains of matter, life, and mind. It is an essentially active principle, and it is the recognition that the ruling principle of matter like that of mind is activity that will deliver the educationist from the horns of the dilemma on which he is impaled. The material world, like ourselves, is actively striving towards a structural wholeness akin to our own, and the fundamental dualism in education is superseded when we realize the error of regarding the object of learning as something external and alien to the mind of the learner. The antithesis is artificial and is overcome in true education where the apparent multiplicity of things and phenomena is fused by the unifying principle of the mind into a cultural unity. Yet what we find in the external world is not ourself as the idealist philosopher believes, but a principle akin to that which is the mainspring of our own life and development.

There is thus a striking analogy between the fundamental problems of the New Physics and the New Education; both are trying to emancipate themselves from the traditional mechanistic attitude. The doctrine of Evolution precludes the mechanistic conception of matter held by the old school of physicists. If matter holds the promise and potency of life and mind it must possess something of the principle which pervades them. Holism is thus an attempt to bridge the yawning chasms which divide the disparate phenomena of matter, life, and mind. The bridge, however, is to be built by additional knowledge and experience, not by dint of speculation alone. "The great darknesses and gaps in experience are mostly due to ignorance. Our experience is clear and luminous only at certain points which are separated by wide regions of obscurity; hence the apparent mystery of the luminous points and of their isolation and unlikeness. Hence also the still greater mystery of their actual union in the three-fold incarnation which constitutes human personality."

General Smuts explores some of these great darknesses and fills some of the gaps. The co-existence of matter, life, and mind in Man leads him to the belief "that the apparent separateness of these three fundamental concepts is not well founded in fact." A deeper insight in the mysteries of Nature will reveal a deeper unity that will remove the artificial barriers which human thought has created. General Smuts puts the traditional concepts in the crucible and a new system of categories emerges—a system in which the concept of creativeness is the keyword. In the light of revised concepts, matter, life, and mind are all creative and active and they overflow into each other's domain. General Smuts surprises matter trembling on the brink of life, mind lurking in the inorganic affinities of matter and the organic selectivities of animal life. Matter, life, and mind all bear the impress of the general creative tendency to wholeness, all break through the narrow mechanistic framework of the traditional disciplines of Science and Philosophy.

It is true that there is an element of Mechanism in the lower manifestations of creative Evolution, but as we rise through the successive stages of matter, life, and mind to the culminating point of human Personality, Mechanism gradually gives place to Holism. The Holistic tendency becomes more pronounced as we advance from the physico-chemical structures to the bio-chemical organisms, and from these to the pyscho-physical structures in which the Holistic principle reigns supreme.

In the final victory of Holism over Mechanism we may thus find deliverance from the dilemma on whose horns we were impaled in the envisagement of the fundamental problem of Education. The material world whose laws the mind has to absorb is not really something external and alien to it, it is flesh of its own flesh, it is the maternal bosom out of which mind has emerged and to which it must always return for warmth and sustenance. We may thus allow the idealist philosopher the identification of subject and object in this qualified sense. There is in reality no identity but a shading off of the categories which sweeps away the traditional landmarks. And, " so far from there being a disadvantage in this overflow of these concepts into each other's domain, a truer picture of reality results from such a treatment, which softens the contours of the somewhat too hard and artificial distinctions popularly drawn between them, and helps to disclose the underlying unity which pervades them all."

In its moral aspect, too, our problem may find its solution in the final embodiment of the Holistic principle--the concept of Personality. Personality is the solvent in which the conflict between freedom and necessity is resolved. Personality is free if it is undisturbed in its wholeness and natural activity, and true education must respect this essence of Personality. It is the duty of the educator to watch over the freedom and wholeness of the educand, to eliminate all disharmonious elements from his Personality and co-ordinate the higher and lower elements into a harmonious whole. Where this harmony is sacrificed freedom is lost. " There are many forms which this enslavement of the Personality takes. Looking upon the Personality as merely a natural activity and not yet in an ethical or religious light, we find that it is sometimes overloaded and gorged with knowledge which it cannot assimilate and digest, and the person degenerates into a mere gatherer of knowledge, a sort of intellectual hoarder. In other cases, again, it accepts the social influence and conventions without mastering and assimilating them and develops into a purely conventional character in which the spontaneity of the inner life is deadened under a mass of social conventions. In other cases it acquires power which it is beyond its capacity to use wisely and well, and it develops a proud, cruel, overbearing, or tyrannical character, and that too under circumstances which would have built up a strong and noble Personality in a case where the assimilative, controlling, co-ordinating power was greater."

The notion of Personality in General Smuts's ideology transcends the narrower concepts of mind and body ; both enter as elements into this higher Holistic entity, but the whole is greater than the sum of its parts. The ultimate aim of education thus becomes the full and harmonious realization of Personality. Smuts, like Herman Kayserling, elevates the cult of Personality above the utilitarian ideals of modern education which foster the perfection of certain abilities and efficiencies at the cost of stunting the harmonious growth and development of the inner self.

The concept of Personality thus forms the corner-stone of General Smuts's philosophic system. In point of time, too, this foundation stone was laid a generation before the final erection of the superstructure. As a student in Cambridge the author of " Holism and Evolution" was fascinated by the subject of Personality, and the idea haunted him for many years until it finally found an adequate expression in his philosophy of Holism. General Smuts advocates the cult of Personality and Hero-worship as a form of devotion which should enter in the moral upbringing of the young. The great Personalities in History are the luminous points in the advance of humanity, they mark the abiding peaks of human achievement, the high places of the earth on which humanity is wont to erect its altars. In the concept of Personality the conflict between man and his environment, freedom and order, subject and object is resolved. The truly great Personality transcends his individual self in the interest of Humanity, which are also his own. The great Personality is the meeting point of the individual and social forces, and self-realization becomes self-renunciation. " Earnest men will always find that to gain their life they must lose it ; that not in self but in the whole (including the self) lies the only upward road to the sunlit summits." Here then we have the identification of subject and object on the moral plane and the conflict between individual freedom and the world-order disappears. " The response to that call in the personal life constitutes the great inner drama, the warfare in the Soul, which issues either in the attainments of Wholeness and Freedom and membership in the immortal Order of the Whole, or otherwise in defeat, enslavement, and death."

The Teaching of History.

BY CAROLINE RYLEY.

THE "Report on the Teaching of History in London Elementary Schools, 1927," seems to me to contain unjustifiable and misleading conclusions.

The "test" given to the children was as follows :

> "Write names of three persons or events in each century.
>
> "If you can, put exact dates (in brackets) against each name.
>
> "On back of paper, write a short account of one person or event out of each century."

1000 A.D. ____________________

1100 A.D. ____________________

1200 A.D. ____________________

1300 A.D. ____________________

1400 A.D. ____________________

Another set of centuries ran from 1300 to 1700 A.D. and a third set from 1500 to 1900 A.D. ; the questions being repeated at the head of each set of centuries ; and each child having one set only of centuries.

Leaving aside the question of the English employed, we may note, in the first place, that the requirements of the test are not clearly enough stated. The form given might easily suggest to children five, not four, centuries ; and (who knows not) the bad results, upon children's work, of initial confusion? Among the fifty-two training college students to whom, as described below, I gave the test, I found general doubt as to the delimitation of the centuries ; a doubt which practically all solved by treating the centuries, wrongly, as five in number.

In the second place, many history teachers would hold that good work may be done, especially in the earlier period (1000—1400 A.D.) by concentrating upon such subjects as monasteries, castles, etc., which do not easily lend a "name" to be put into a "century." It is true, I believe, that the Board does not smile upon purely "social" history ; perhaps on the ground that, through vagueness and impersonality, it may fail to grip the children. The "Reporters" declare : "We are more than ever convinced that the history syllabus in the majority of schools should be built round the stories of the great men and women of the past." It cannot be denied that their " test " can certainly be more successfully tackled from such a syllabus ; and the best of their " specimen answers " obviously comes from a school teaching, well, upon " dates and events " lines. Yet the fact remains that there are arguments in favour of more purely " social " or " local " history ; [it avoids, for instance, the pit into which " event " history almost invariably falls—of a glib, sham " understanding " of men and motives] ; and that " social history " teaching is simply *not tested* by an examination of this description.

Thirdly, the inspectors would appear rashly to have drawn, from failure to fill in names as required, the conclusion that there has been " neglect to deal with time relations and the sequence of events." This conclusion is not inevitable. Events and persons might be, for a child of thirteen, in sufficiently correct time-relations to each other without his being able to place them, especially those that lie near the terminals of centuries, in their proper century. [How many of the children tested must, for this reason, have left out their favourite Richard I ?] : The only fairly sure way of getting this general ability to " place " is either by an amount of time-charting not in all circumstances advisable ; or by the learning of dates. I am, myself, inclined to think that, so far, the larger part of correct " placing in centuries " comes from a preliminary knowledge of dates. [Incidentally, the best of the children's specimen answers gives the exact date for each event.] This point is of practical interest for history teachers ; and light might have been thrown upon it from the " test." Yet the inspectors pay no attention to it ; and seem to take it for granted that the children will " place " more easily immediately in centuries. If, however, children do learn more easily by actual " dates," it is not irrelevant, in judging of the " Report," to remember that there are good schools, both in Germany and in England, which would hold it sufficient for children of school-leaving age to know some twenty dates in all.

Then—since the choice of a subject upon which to write was conditional upon first placing it in its century—I find little justice or accuracy in the verdict : " Twenty-eight per cent. of the children were unable to write a reasonably accurate account of any two persons or events chosen by themselves out of a given period of 400 years."

Again, the inspectors hold that " lack of revision " is " clearly evidenced " by " the fact that the average mark rises as the four centuries approach the present day." (Section 2, page 15, and Section 88 (1), page 5.) Does not this ignore other possible factors, such as that characteristic of history which makes it easier to find names in later than in earlier centuries? Who could compare, in this respect, the eleventh century with the nineteenth? Indeed, all three of the last statements quoted appear to lack that care in the sifting of evidence which historians generally consider desirable.

Finally, I would challenge the inspectors' closing dictum: "It should, we think . . . be possible to find that any given period of English history would suggest to the children certain clear and well-defined persons and incidents about which they would be not only able but anxious to talk and to write intelligently and sympathetically." (Section 25, page 16.) The means of attaining this end—of definedness and readiness—might, I fear, easily be uneducational; the result surprisingly valueless. Its prospect leaves me, for one, cold and melancholy. It is true the inspectors recommend an attractive-sounding means; but it is a means as yet little tested by experience; and when we visualise its possibilities—the "reading," from the books we all know; the "discussion," to the ends approved by the inspectors; the "writing," with the necessary sacrifices to that neatness demanded by inspectors—we may feel that the attractiveness of the means may remain a matter of sound and words; that the method is doubtfully as fruitful in practice as it is charming in theory.

Doubting, then, the justice of these findings, and of the expectations upon which they were based, I put the "test," with some modifications, to fifty-two students of this college who had passed through one or other of thirty-two good secondary schools.

These fifty-two students came in response to a general invitation, without knowing the purpose of it. Students who have chosen history as a college subject, and are therefore presumably interested in it, predominated. About 25 per cent. had taken history in the "Higher Certificate" (which means, among other things, probably a good deal of "good" private reading).

I gave the questions of the test orally, and reproduced the form for "centuries" as exactly as possible on the blackboard.

I found, as stated above, that practically all took the centuries in each set as five, not four, in number.

The number of correct entries in the earliest period (eleventh to fourteenth century inclusive) averaged, per student, 4.85 out of a possible 12; in the second period (fourteenth to seventeenth century), 7.6; in the latest (sixteenth to nineteenth century—a favourite period for Higher Certificate), 10.4; making, for the three periods, an average, out of a possible 12 per period, of 7.62, as compared with the children's 6. The number of correct entries increased as the centuries approached the present !

A fair proportion of the names entered were those of English sovereigns. Practically all fell back, for the sixteenth century, on Queen Elizabeth. One ("Higher Certificate") filled up three of her twelve places with Elizabeth, Charles II, William IV ; in another, seven out of twelve are names of sovereigns. The test, in fact, might have won 100 per cent. of marks, as regards entries, for those who had learnt the list of kings. Other answers ran along such single lines of thought as "William I, Harold, William II" ; "John, Runnymede, Magna Carta" ; "James I, Charles I, Charles II" ; "Armada, Queen Elizabeth, Philip II" ; "Armada, Queen Elizabeth, Raleigh."

[We have already remarked that the test might more or less floor children fairly well taught on other lines ; it now appears that children might rise to this part of the test from a very slight and shallow acquaintance with history.]

To continue : Two others give the Black Death followed by the Fire of London. Two put Charlemagne into the fourteenth century. Several have two entries only out of twelve.

I was obliged to curtail the time given to the test, with the result that some twenty out of the fifty-two (including most of the Higher Certificate people) were not able to complete their written accounts. But, when all allowances are made, there were at least ten who were "unable to write a reasonably accurate account of any two persons or events chosen"—(under restrictions as I have pointed out)—"by themselves."

I append specimens of answers and of papers. I postpone a consideration of the character of these answers to remark that, so far, though my test lacked the completeness and the scope of that applied by the inspectors, yet its result may reasonably suggest both that the inspectors' test was not a fair one for children of thirteen and that its being taken as a standard may actually harm the teaching of history. What it suggests as regards secondary schools is irrelevant at the moment.

But now please read Paper I of the Appendix. It is one of the two papers which would probably have received highest marks at any history examination. Its readiness, intelligence, and sympathy would, I imagine, have delighted the inspectors. The student wrote, as I noted at the time, busily, without pause, without hesitation. She tells us that Elizabeth tried to bring religious toleration ; it does not occur to her to consider any objection, or to bring proof, or to offer illustration. She tells us that Elizabeth's reign was one of vast colonization; she has accepted the word "colonization" without bothering to ask herself "Where were Elizabeth's colonies?" The whole is glib and semi-truthful. Of what good is such history? The girl has furnished herself with a lay-figure dubbed Elizabeth, who moves to fine phrases such as "A Tudor, therefore a despot." "She would not brook the Pope's attempt to turn England Roman Catholic." Of what value is all this to her?

This touches the core of the whole business. I suggest—as a teacher and a student of history, with all humility—that all study of history sees, as in a glass darkly; that neatly rounded-off accounts of persons and events are spurious ware; that early "definedness" and "readiness" mean fatal superficiality and inaccuracies—accurate enough, perhaps, for the needs of "conversation," (Section 4, page 4) but valueless for education and for life; that what one can say, "intelligently and sympathetically" at a moment's notice, about "persons and incidents" is hardly worth spending valuable time in acquiring.

A sense—that can grow—of the *reality* of the past, and of the interest of the present; a truer idea of values in life; a feeling for truth, and of its difficulty; a dawning understanding of how humanity works; a clearer understanding of the true greatness of our people and of how it may be maintained or restored—such as these make the value, for life, of history work; they are based—I think—on testable knowledge; and can—I think—be tested; but not by such a test as this.

Other points raised by the report are, indirectly, of equal importance. Thus it declares that history is being taught by people who are frankly ignorant of it; and complains of syllabuses and of examination questions—the work of Heads who may be even more ignorant than the teachers, though I doubt if they could venture to be so frank. But the remedy here lies with the appointing and controlling authority; which asks a Head to act omnisciently without providing him with the requisite omniscience. If the Head is made responsible for the history teaching, small blame to him if he thinks that it is himself, and not the history teacher, that matters; small blame for not guessing that he really doesn't know enough about history to set syllabuses or to examine personally. One can sympathize with the Head who fell back upon the "missing word" idea "The accession of (11) in 1485 is generally said to mark the close of the (12) Ages." "The news of the capture of (13) by the

Turks was received with dismay throughout Europe." It is not irrelevant here to mention the head mistress whom I met yesterday —who may have as many as 2,000 papers to see to, at the same time as she is carrying on a class of her own. It is entirely relevant to recall the fact that the setting of syllabuses and of examinations—particularly the latter—directs and controls the teaching. Is there any end at all to be served—save that of convenience to the authorities—in making the Head responsible for every subject?

Then—when I think of our teachers of history-cum-geography-cum-English-cum-arithmetic-cum-singing-cum-drawing . . . and their classes of forty to fifty children—it makes me smile to hear the quite gentle plaint that they fail to foster a habit of clear thinking; and apparently, alas, fail "to keep in touch with the works of the great historians, or with recent historical literature."

The overcrowding of the syllabus, pointed out in the report, is a "Root-of-all-Evil" in the secondary even more than in the elementary school. Is it too strong to say that, however good the student, the books, and the teacher, it makes history work almost valueless? for it rules out, almost entirely, the use of investigation, of imagination, and of thought. But isn't this overcrowding the result of the domination of the schools, whose aim is education, by the universities, whose aim is knowledge?

APPENDIX.

Examples of Papers and Answers of Students.

I.

1500—Drake, Philip of Spain, Elizabeth.
1600—James I, Cromwell, Charles II.
1700—Walpole, Pitt, General Wolffe.
1800—Queen Victoria, Gladstone, Disraeli.
1900—Hardy, Baldwin, Lloyd George.

(1) Queen Elizabeth reigned from 1558-1603. She is often known as the "Maiden Queen." When she came to the throne the country was in a state of upheaval through religion and she tried to bring religious toleration.[1] She was typically a Tudor, therefore a despot. She would not brook the Pope's attempt to turn England

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[1] Inaccurate.

Roman Catholic, and like Henry VIII threw off the rule of the Papacy in England. The people were loyal to her and during her reign she had peace, order, and security in her country. Her reign is famous for its great sea-dogs—Drake, Grenville, Raleigh, etc. When she came to the throne the treasury was practically empty. Therefore by skilful management and diplomacy she kept off war with Spain, which was inevitable, until she could afford war,[2] and until her people were able to withstand an army. This culminated in 1688 at the Spanish Armada from when England's supremacy of the sea is dated. Elizabeth's reign is also one of vast trade and colonization.

(Her other answers are of the same quality.)

II.

(This is a fair specimen of what might be considered a "medium" paper.)

1400—Battle of Agincourt between England and France. The King of England was Henry V. The battle was won by the English, but with great loss of life.

1442—The Queen of Spain provided Columbus with ships and men, so he could prove the world was round by sailing to India by going west. He did not get to India, but after three months' sailing he arrived at the West Indies.

1600—Raleigh, Gilbert, Cabot was the time of explorers. Gilbert tried to find a north-west passage to India round the north of Canada. He thought it would be an easier way of getting to India than going round South America or round South Africa. He failed.

Raleigh tried to find the fabled City of Gold in the Spanish Main, he failed twice. He also tried to colonize Virginia and he was the first to introduce into England the potato and tobacco.

1700—People rebelled against Charles I. He was a Catholic and put severe laws on the Protestants. He was executed and Cromwell started the Commonwealth Government which lasted for eleven years. Eventually Charles II was restored but his power was limited.

(This has more real truth and imaginative power than the former, a better written and informed paper. It suggests the effect of an overcrowded syllabus upon good native ability.)

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[2] Part of the usual 'ready-made' stock-in-trade of the history-teacher.

III.

1000—Battle of Hastings, 1066.
1100—
1200—Magna Carta, 1215.
1300—
1400—

1066—William of Normandy came over to England. Met Harold of England at Hastings. Normans retreated till Harold's eye was pierced by an arrow from a retreating Norman. Confusion among English, leading to their defeat.

(This student has left school some years, and is not taking history at college. She may be asked to teach history in an elementary school.)

Some Tests and Correlations of Hand-Eye Co-ordination.*

BY FRED AKROYD.

I—INTRODUCTION.

ALTHOUGH there is a great diversity of opinion among psychologists as to what " intelligence " really is, there can be no doubt that there is a distinct tendency to success of the same person throughout all conscious aspects of cognition. This is evidenced by the fact that the results of various intelligence tests tend to correlate very highly with one another, and, this being the case, we are justified in speaking of a general factor of intelligence.

With regard to " motor " tests, the point that has been most studied has been the relation that exists between the results of mental tests and those of certain " motor " tests. Here we get a wide variation in the results obtained.

Clark Wissler[22], Binet and Vaschide[4], Glenn[11], Perrin[16], and Gilbert[10] found that there was about a zero correlation. Gesell[9], Bolton[5], Wooley and Fischer[23], Kirkpatrick[13], Abelson[1], Burt[6], and Bagley[2], all conclude that there is a positive correlation, whereas Terman[20], Bickersteth[3] and English[7] assert that there is a negative correlation.†

The motor tests used by the different investigators varied considerably, and yet most of these investigators were comparing mental ability with what they called " motor ability." It was taken for granted that there was a general factor of motor ability in the same way as there is a general factor of intelligence. Is there, however, a general factor of motor ability ? Can we speak of " *a* motor ability " or is it more correct to speak of motor abilities ? This is a most important point for vocational guidance and vocational selection. If we ascertain the degree of motor ability required for any particular job, will any motor test do or must we have a motor test based on the particular motor ability required for the successful performance of this job ?

These are the questions that the present research sets out to answer.

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*Based on a thesis approved by the University of London for the degree of M.A. in Psychology.

†The numbers are references to works listed in the bibliography at the end of this paper.

II—PREVIOUS RESEARCH.

(1) F. A. C. Perrin[16], of the University of Texas, in his paper on " The Experimental Study of Motor Ability," finds an absence of correlation among the scores of the various tests used. His series of tests, however, covered a very wide range, and he does not give reliability coefficients in all cases. Intelligence, too, seems to play a prominent part in some tests and not in others.

(2) Muscio[15] carried out on behalf of the Industrial Fatigue Research Board an investigation into " Motor Capacity with Special Reference to Vocational Guidance."

The question which he set out to answer was : What are the inter-relations of different motor capacities ? The tests again cover a very wide field but they do not seem to have been selected according to any preconceived plan.

The outstanding feature of the results is the small degree of correlation between the scores for the different motor tests. The correlations given are all worked from the results of tests given to very small groups (no group consisted of more than twenty subjects). Nevertheless, they are sufficient to show that even if more subjects had been tested we could not have expected any high correlations between the different motor tests.

Muscio gives reliability coefficients for only three tests, but all these are high, viz., .86, .70, .56. It might also be pointed out that the reliability coefficients of these tests increase with practice. (The final reliability coefficients were .92, .82, and .88, whereas the inter-correlations between the tests show practically no increase.)

(3) Miss Evelyn Garfiel[8] has carried out an investigation into " The Measurement of Motor Ability." She concludes that " The term ' motor ability ' is justified and that we may begin to investigate the relationship of this group of abilities to intelligence and to various special abilities for vocational guidance." Her results, however, do not seem to warrant this conclusion, since nearly all her correlations are non-significant and practically all the higher correlations are between different types of strength. The question of accuracy does not appear to have been given the importance due to it.

(4) The National Institute of Industrial Psychology[24] has recently published a report on " Occupational Analysis—the study of aptitudes and attainments necessary for success in different kinds of employment." In the appendix is a " Note on Some Tests of Manual Dexterity." The results show that " Manual Dexterity

is not so much a matter of general but of special skill of different kinds." Unfortunately, no detailed account of the test is given, but we are told that one is in course of preparation.

III—DESCRIPTION OF THE TESTS.

Although high correlations had not generally been found between the scores in motor tests covering a wide field, it seemed that they might possibly be found between scores in different motor tests if the range of tests was more limited.

It was therefore decided to deal with one branch of motor capacities only, viz., that concerned with hand and eye co-ordination.

The field of investigation was first of all divided into two parts: firstly, that dealing with what may be termed "momentary" adaptation; secondly, that dealing with what may be termed "continuous" adaptation. Tests dealing with "momentary" adaptation were those involving movements where the subject made his reaction in such a way that once it had begun adjustment was impossible. In the tests of "continuous" adaptation, the subject could guide his reactions throughout, and had more time to correct his movements if he found himself going wrong.

Each of these two main classes was again subdivided into two parts: the first dealing with a stationary target, and the second dealing with a moving one.

Thus four tests were necessary:

Test A.—A test of "momentary" adaptation with stationary target.

Test B.—A test of "momentary" adaptation with a moving target.

Test C.—A test of "continuous" adaptation with a stationary target.

Test D.—A test of "continuous" adaptation with a moving target.

Hence it could be seen whether there were any high correlations between the scores in tests having a common element, viz., A and B, C and D, A and C, B and D, even if there were no high correlations between the scores in all four tests.

In addition to the above hand and eye co-ordination tests, all subjects who took all the four tests were given a test of visual acuity.

DESCRIPTION.

Of the four tests used one had been used previously, whereas the other three were new tests.

Test A.

This was designed to test the subject's power of " momentary " adaptation with a stationary target. For this purpose it was decided to use the aiming test as described in Whipple's manual of " Mental and Physical Tests : Simpler Processes," Test II, with one or two modifications.

The prepared blanks containing the ten irregularly arranged crosses were attached to a board which was secured upon the wall. The target was so arranged that the bottom row of crosses was of the same height as the subject's shoulder. A foot below the target was placed a horizontal shelf 8-in. wide.

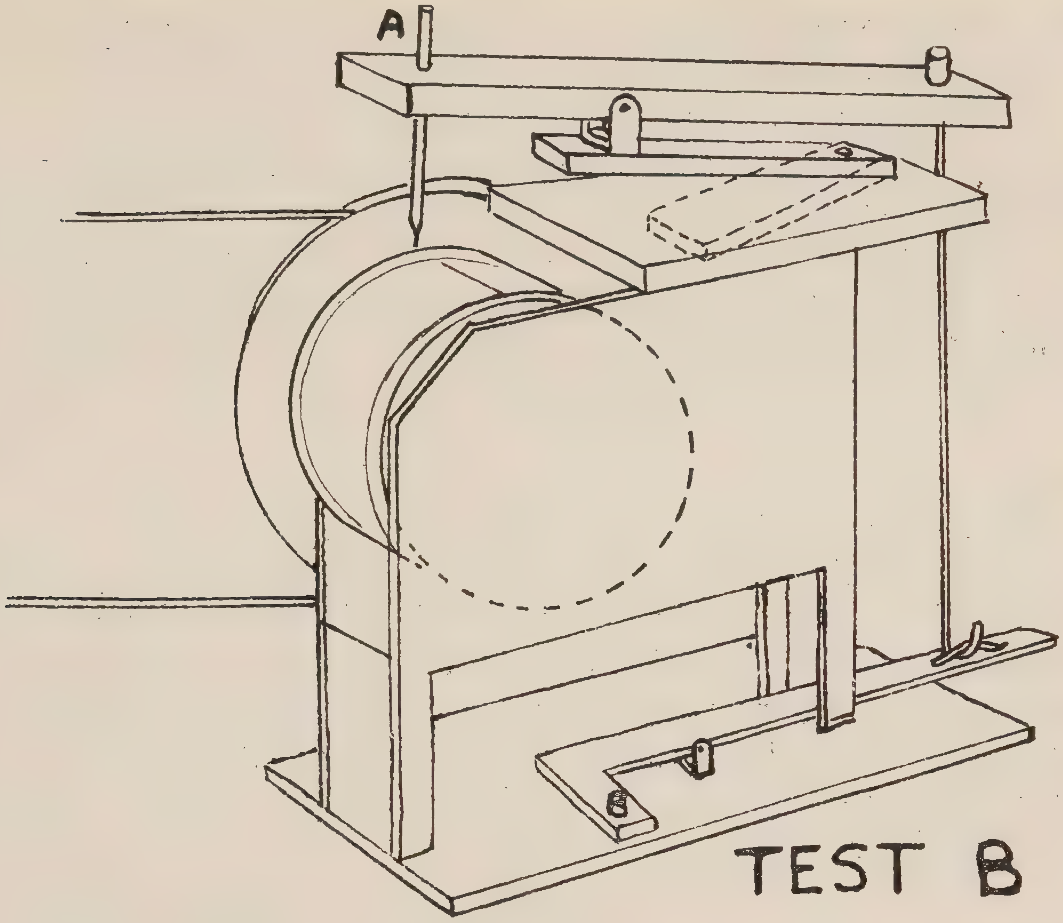
The subject stood with his right shoulder squarely in front of the target. He was given a " pencil " with a metal point, and told to strike in time with the beat of a metronome, following a two-beat rhythm, so that the pencil struck the target at the one beat and struck the horizontal shelf at the other. The metronome was set at 72 beats per minute.

Before beginning the actual test the subject was allowed ten aims at a practice target—one at each cross. Then, for the test proper, he was given two targets. He was told to start at the first cross on No. 1 Target, and make successive strokes, one at each cross, until the tenth cross was reached. Then the same procedure was adopted with Target No. 2. This process was four times repeated, but in the second and fourth rounds the order was from ten to one. In each round, however, Target No. 1 was completed before the subject began on Target No. 2. He thus made five aims at each mark on each target, or one hundred aims in all. His score was the total of the distances in millimetres of these aims from the centre of the crosses. In this test only the right hand was used.

In order to reduce the great amount of work entailed in marking the test, it would probably have been better to use as targets bull's eyes with concentric circles at one millimetre intervals. These blanks can now be obtained.

Test B.

The aim of this test was to ascertain the subject's power of " momentary adaptation " with a moving target. After trying out several pieces of apparatus the following was finally chosen :



A strip of paper was attached to a revolving drum of 28-c.m. circumference, which was driven by a gramophone motor in order that the speed might be kept constant for all subjects. On the paper were two straight red lines running at right angles to the ends of the drum and also to the subject's body. These lines were so arranged that the distance between them was equal to half the circumference of the drum—i.e., 14-c.ms. Above the drum was fixed a pencil (*A*) in such a way that when the subject struck a key (*B*) with the fingers of his right hand a dot was made on the paper. The targets to be hit appeared at approximately the rate of one per second.

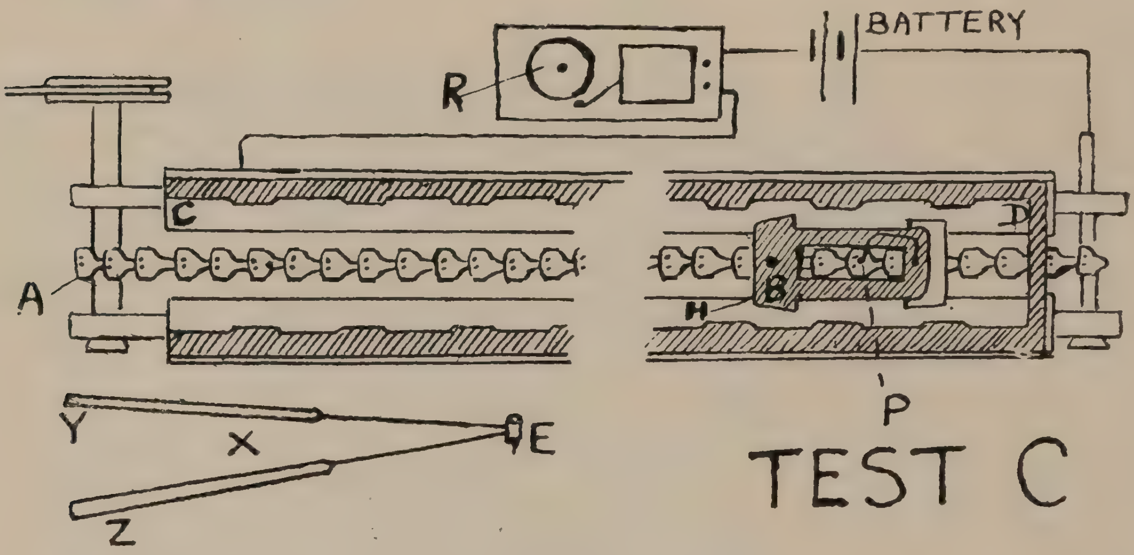
The subject was seated directly in front of the apparatus at a fixed distance from it. Before beginning the test proper, the subject was allowed to strike the key *B* several times in order to accustom himself to the apparatus. Whilst he did this, the drum remained stationary. Then the drum was set in motion in order to give the subject some idea of the speed at which he would be expected to strike the key. He was not allowed to make any aim, however, until the actual test began. In the test he made twenty aims—i.e., ten at each line, and then had ten seconds' rest, during which time the experimenter moved the pencil slightly nearer the subject in order that the different aims could be more easily distinguished.

This process was repeated nine times so that the subject made two hundred aims in all.

For scoring purposes there were drawn parallel to each of the two red lines, two other lines, so that these included the middle fifty aims at each target. The score for each target was the distance in millimetres between these two lines. The score was taken separately for each target for the purpose of finding the reliability coefficient, but the two scores were combined when finding correlations with the scores of other tests.

Test C.

Test C was designed to measure the subject's power of " continuous adaptation " with a stationary target. The tracing board as described in Whipple's Manual of Mental and Physical Tests, Test 12, seemed to the writer to be unsatisfactory, as there can be little guarantee that all the subjects are performing the task at the same speed. Since a variation in the speed at which the tracing is done may cause a variation in the result, the speed was made constant for all subjects.

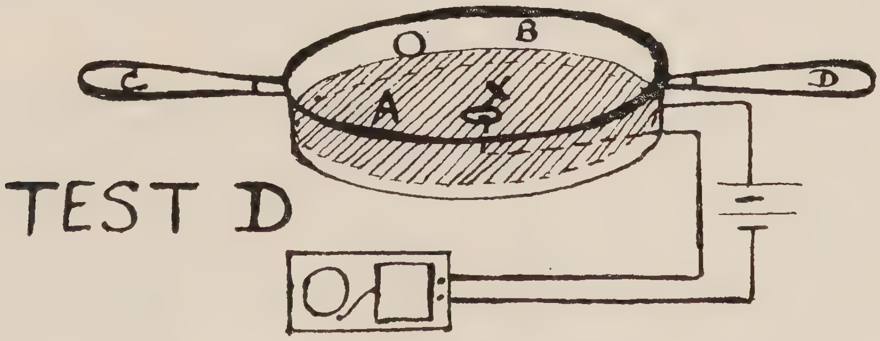


The apparatus used is illustrated in the accompanying diagrams. *A* was a continuous chain which was driven by a gramophone motor. To this chain was attached a pin *P*, on which was placed a flat piece of metal *B*. The subject's task was to guide *B* along the groove *CD* without allowing it to touch the sides. The subject was seated opposite the centre of the groove, which was parallel with his body. Each subject was placed at the same distance from the apparatus and a head rest was used to ensure that the position of the body was the same in all cases. The piece of metal *B* was guided by means of the apparatus *X*. The subject held the handles *Y* and *Z*, one in each hand, with the palms of the hands facing downwards. He inserted the projection *E* in the hole *H*. The slot *K* allowed the subject to have control over the movement of *B*. If the subject moved *B* too slowly the pin *P* forced the projections *M* and *N* into the sides of the groove. It also prevented the subject from moving *B* too quickly.

The length of the groove to be traversed was 30-in., and the speed of the motor was so regulated that this distance was traversed in eleven seconds. The score was the total number of contacts made in ten trials. The subject was allowed ten practice trials before beginning the actual test. The contacts could easily be counted, since the apparatus was so wired that a bell *R* rang whenever a contact was made. Along the sides of the groove *CD* pieces of metal were cut away at regular intervals so that it was impossible for the subject to drag the piece of metal *B* along the whole length of the groove, thus causing one continuous ring of the bell. There were thus fourteen "gateways" to negotiate. With the speed of the chain regulated in the way described, it was impossible for the subject to pass the metal *B* through the different "gateways" by a number of actions corresponding to "momentary adaptation" as happened with another form of the apparatus when the speed was made by the subject to the beat of a metronome.

Test D.

Here we have a test of "continuous adaptation" with a moving target. The apparatus used consisted of a flat circular tray *A* 8-in. in diameter, with a perpendicular side *B* $\frac{7}{8}$-in. high. *C* and *D* were two handles and *X* was a hole in the centre of the tray.



The aim of the test was to get a ball-bearing, $\frac{3}{4}$-in. in diameter, into the hole *X* as many times as possible in the given time. The apparatus was so wired that a bell rang each time the subject succeeded in getting the ball-bearing to rest in the hole.

The procedure was as follows: The subject was first of all given a card instructing him what he had to do.

After he had read this carefully to himself the subject was seated in a chair in an upright position. He was first of all allowed half a minute for practice in order to accustom himself to the apparatus. Then after a quarter of a minute rest, during which the subject was told to relax and rest the tray on his knees, the test proper began. This consisted of ten minutes' work with a quarter of a minute interval for rest after each minute. Two seconds before each minute's work was due to began a warning signal "ready" was given.

The score was the total number of times the subject rang the bell in the ten minutes' work.

Ability at Drawing and Games.---The subjects of Group G were ranked by their mistresses according to their ability at games and also according to their ability at drawing. Although this did not form an important part of the research, it was felt that it would be a matter of some interest to find out whether the subjects' ability at games and their ability at drawing correlated highly with their ability in the tests.

SUBJECTS AND PROCEDURE.

The subjects of the experiments fall into two groups: Group B and Group G. Group B consisted of fifty-two boys whose ages ranged between twelve and sixteen years. Twelve of these boys did not take Test C. All were pupils at a secondary boarding school and were drawn from all parts of the country. Group G consisted of twenty-five girls whose ages ranged between twelve and sixteen years. These girls were pupils of the girls' department of the school attended by the boys of Group B.

None of the subjects did more than two tests at one sitting, and then an adequate interval was allowed between the tests to prevent any possibility of fatigue effects.

When the tests had been given to all subjects, it was decided to find out whether there was any practice effect. Accordingly, twenty subjects were selected at random from Group B.

These performed the tests on eight successive school days—i.e., the tests were given on all days except Sundays.

The procedure in the different tests was as follows:

Test A.

In this test no practice target was used, since all the subjects were well acquainted with the procedure. Each day the subject was given only one target on which he made fifty aims in all—five at each cross. In Rounds 1, 3, 5 he proceeded from No. 1 to No. 10, and in Rounds 2 and 4 he proceeded in the reverse order from No. 10 to No. 1.

Test B.

In this test the procedure each day was exactly the same as on the first occasion, except for the fact that there was no preliminary practice with the key.

Test C.

The subject sat down and did the ten trials each day without any preliminary practice. Only eleven subjects completed the eight days on this test.

Test D.

In this test there was no half-minute practice before the actual test began, as there was on the first occasion.

RESULTS.

(1) Reliability of the Tests.

The "reliability" coefficients were worked from the scores gained by the fifty-two subjects of Group B who took tests A, B, and D, and from the scores of the forty subjects who took Test C. These "reliability" coefficients are given in Table A.*

Table A.

Test.	*" Reliability " Coefficient.*	*Probable Error.*
A	.83	.029
B	.77	.037
C	.68	.05
D	.93	.013

Test A.

In this test there were two targets. After making ten aims (one at each cross) on the first target, the subject made ten aims at the second. This was repeated four times, but in Rounds 2 and 4 the order was from 10 to 1. In order to find the "reliability" coefficient, the correlation was found between the scores obtained on each target separately.

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*The formulæ used for the figures in Tables A, B, C, D, G, I, J, K were :

$$r = \frac{E\,(x.y)}{\sqrt{Ex^2Ey^2}} \qquad P.E._r = \frac{.6745\ (1-r^2)}{\sqrt{n}}$$

The formulæ used for the figures in Tables F and H were :

$$R = 1 - \frac{6\ Eg}{n^2-1} \qquad P.E._r = \frac{.43}{\sqrt{n}}$$

Test B.

Here the subject aimed at two red lines alternately. The scores were taken for each line separately and the conclusions found between them.

Test C.

The subject traversed the groove ten times. The correlation was found between the sum of the scores for trials 1, 3, 5, 7, 9, and the sum of the scores for trials 2, 4, 6, 8, 10.

Test D.

Here the subject was allowed ten separate minutes divided by quarter-minute intervals to perform the tests, and the correlation was found between the sum of the " odd " scores and the sum of the " even " scores.

It will be noticed that the correlation coefficients were in all cases high.

(2) GROUP B.

TABLE B.

SHOWING CORRELATION COEFFICIENTS BETWEEN THE FOUR CO-ORDINATION TESTS GIVEN TO GROUP B—FIFTY-TWO SUBJECTS. (ONLY FORTY SUBJECTS TOOK TEST C.)

Tests.	*A.*	*B.*	*C.*	*D.*
A	—	.12	.13	−.06
B	.12	—	.19	.37
C	.13	.19	—	.04
D	−.06	.37	.04	—

P.E. varies from .107 to .082.

(3) GROUP G.

TABLE C.

SHOWING CORRELATION COEFFICIENTS BETWEEN THE FOUR CO-ORDINATION TESTS GIVEN TO GROUP G. (TWENTY-FIVE SUBJECTS.)

Test.	*A.*	*B.*	*C.*	*D.*
A	—	.18	−.03	−.40
B	.18	—	.11	−.13
C	−.03	.11	—	.19
D	−.40	−.13	.19	—

P.E. varies from .135 to .113.

(4) GROUPS B AND G COMBINED.

TABLE D.

SHOWING CORRELATION COEFFICIENTS BETWEEN THE FOUR CO-ORDINATION TESTS GIVEN TO BOTH GROUP B AND GROUP G. (SEVENTY-SEVEN SUBJECTS; TWELVE SUBJECTS OF GROUP B DID NOT TAKE TEST C.)

Test.	*A.*	*B.*	*C.*	*D.*
A	—	−.09	−.15	−.01
B	−.09	—	.25	.13
C	−.15	.25	—	.07
D	−.01	.13	.07	—

P.E. varies from .084 to .077.

(5) TABLE E.

SHOWING THE PROBABLE ERROR OF THE DIFFERENCE OF THE MEANS FOR BOYS AND GIRLS.

With regard to the Means given below it should be pointed out that in Tests A, B, and C the lower number indicates the better score, whereas in Test D the higher number indicates the better score.

		Group B. 52 *Boys.*	*Group G.* 25 *Girls.*	*Difference of Means.*	*P.E. of Difference of Means.*
Test A:	Mean	353	247.88	105.12	9.07
	0	72.64	44.52	—	—
	P.E. of Mean...	6.79	6.006	—	—
Test B:	Mean	22.52	29.16	6.64	1.217
	0	6.49	10.78	—	—
	P.E. of Mean...	.607	1.45	—	—
Test C:	Mean	45.375	55.16	9.785	2.18
	0	13.007	12.47	—	—
	P.E. of Mean...	1.387	1.682	—	—
Test D:	Mean	79.37	88.72	9.35	4.404
	0	27.90	26.30	—	—
	P.E. of Mean...	2.61	3.55	—	—

Twelve boys of Group B did not take Test C.

(6) TABLE F.

SHOWING THE CORRELATION COEFFICIENTS BETWEEN THE AGES OF THE SUBJECTS AND THEIR ABILITY AT THE TESTS. (GROUP B, FIFTY-TWO SUBJECTS; ONLY FORTY OF THESE TOOK TEST C. GROUP G, TWENTY-FIVE SUBJECTS.)

TESTS.

		A.	*B.*	*C.*	*D.*
Age	Group B..	.018	.174	.114	.177
	Group G..	—.178	—.135	.158	.116

P.E.r for Group B=.060.
P.E.r for Group G=.086.

(7) TABLE G.

SHOWING THE CORRELATION COEFFICIENTS BETWEEN THE VISUAL ACUITY OF THE SUBJECTS AND THEIR ABILITY AT THE CO-ORDINATION TESTS. (SIXTY-FIVE SUBJECTS.)

Test.	*Visual Acuity.*	*P.E.*
A	.125	.082
B	.083	.083
C	.221	.079
D	.008	.084

(8) TABLE H.

SHOWING THE CORRELATION COEFFICIENTS OF AGE AND ABILITY AT THE TESTS WITH ABILITY AT DRAWING AND ABILITY AT GAMES. (TWENTY-FIVE SUBJECTS OF GROUP G.)

TESTS.

	A.	*B.*	*C.*	*D.*	*Age.*
Games	.43	.23	.13	−.02	−.06
Drawing ..	.35	.125	.106	.02	−.05

P.E.=.086.

(9) PRACTICE EFFECT.

TABLE I.

SHOWING THE AVERAGE OF THE INTER-CORRELATIONS BETWEEN THE TESTS FOR THE EIGHT PRACTICES. (TWENTY SUBJECTS OF GROUP B FOR TESTS A, B, AND C; ELEVEN SUBJECTS FOR TEST D.)

TESTS.

	A.	*B.*	*C.*	*D.*
Tests A	—	.12	.17	.026
,, B	.12	—	.085	.104
,, C	.17	.085	—	.092
,, D	.026	.104	.092	—

(1) FINAL "RELIABILITY."

The initial "reliability" coefficients were given in Table A. The final "reliability" coefficients are given in Table J.

Test A.

As only one target was used for practice effect, the final "reliability" is taken as the correlation between the scores of Practice 7 and Practice 8.

Test B.

Here again the "reliability" coefficient is the correlation between the scores of Practice 7 and Practice 8.

Test C.

The "reliability" coefficient is the correlation between the sum of the scores for the "odd" trials and the sum of the scores for the "even" trials in Practice 8.

Test D.

The "reliability" coefficient is the correlation between the sum of the scores for the "odd" minutes and the sum of the scores for the "even" minutes in Practice 8. (Twenty subjects for Tests A, B, and D; Eleven Subjects for Test C.)

TABLE J.

Test.	*Final "Reliability" Coefficient.*	*Probable Error.*
A	.911	.026
B	.797	.055
C	.801	.073
D	.972	.008

DISCUSSION.

The outstanding feature of the results of the motor tests is the fact that in nearly every case the inter-correlations are very low. This is in general agreement with the results of previous investigators, most of whom, however, explored a much wider field.

Although it might possibly be argued that the tests were not very extensive since only seventy-seven subjects were tested, yet this number is sufficiently large to show that we cannot reasonably expect high correlations however many subjects were tested. It must also be remembered that the tests were intensive. In Test A, for example, each subject took 100 aims at the stationary crosses, and the scores in Test B give the result of as many as 200 aims at the moving targets.

In Table B, which gives the results for fifty-two boys, there is only one coefficient that is even suggestive of a common factor. This is .37, which expresses the correlations between the scores of Tests B and D. When we turn to Table C, which gives the results for twenty-five girls, we find, however, that the corresponding correlation is only – .13.

In Table C the only coefficient which can claim to be more than even twice its probable error is –.40, the coefficient showing the correlation between Tests A and D. Here, again, when we turn back to Table B we find that the corresponding coefficient is –.06, so that too much importance cannot be attached to it.

Table D gives the results of combining the boys and the girls into one group of seventy-seven subjects. The highest coefficient is now .25, and exactly half the coefficients are negative. This leads us to believe that we shall find no great differences in the scores due to sex. Had the boys been very much better than the girls or *vice versa* we should have had a marked increase in the size of the correlation coefficients by combining the two groups.

If we examine Table E we see that there is, however, a significant difference between the means of the scores for boys and girls in Tests A and B. In Test A (aiming at a stationary object), the girls were better than the boys, but in Test B (aiming at a moving object) the boys were better than the girls. The procedure adopted was the same for the boys as for the girls, and the differences cannot therefore be attributed to any differences in the method of administering the tests. The ages and social standing of the boys and of the girls were approximately the same. At present no adequate reasons for the differences in the scores can be offered. Had the boys been better in both tests the problem would have been somewhat simpler.

With regard to Test A, which was a slight modification of the test described by Whipple, we find that the girls did better than the boys. Whipple, however, says* : " Sex differences are slight, but, on the whole, boys are more accurate than girls, and men than women." It is difficult to believe that the slight modification which was made in the procedure (see description of the tests) should have favoured the girls more than the boys.

In his " Factors in Mental and Scholastic Ability,"† Stead asserts that " The girls (the group is too small to use as a basis for any definite deduction) seem to be decidedly above the boys in most scholastic tests, but decidedly below them in motor tests." The inferiority of the girls in the motor tests would seem to depend solely on the tests chosen. In the results of the present investigation the girls were superior to the boys in two tests and were inferior to the boys in the two other tests.

Table F shows the correlation between the scores of the various tests and the age of the subjects. The marked feature of all these correlations is the fact that they are so low. Not one of the correlations is three times its probable error. We can, therefore, conclude that in the test chosen the age differences are unimportant both for boys and for girls, at all events between the ages of twelve and sixteen years.

Table G gives us the correlation coefficients between ability at the tests and visual acuity. Here, again, the correlations are all exceptionally low but positive. Only in one case does the correlation coefficient exceed even twice its probable error, that is, in Test C, and then it is less than three times. We must, therefore, conclude that visual acuity plays no important part in the ability to perform the tests well.

In Table H we have the correlations of the ability at the tests with the ability at games and also with ability at drawing. These correlations are only based on the scores for twenty-five subjects, and, therefore, the conclusions to be drawn are only tentative. Nevertheless, the correlations again tend to be low and the only two that are really significant are those between Test A and Games and between Test A and Drawing. Here the correlations are .43 and .35 respectively.

We now come to a discussion of the effects of practice. Although only twenty subjects took Tests A, B, and D, and only eleven subjects took Test C, to ascertain the effects of practice, there seems to be no doubt that the facts would be materially the same if a larger number of subjects had been practised. Each of these subjects carried out the operation to be tested an exceptionally large number of times. In Test A at the end of the practice each subject had made 500 aims at the stationary target, and in Test B he had made 1,800 aims at the moving line. In Test C he had traversed the groove 100 times, giving him the possibility of making 1,400 contacts. Test D was equally intensive, for he had attempted to get the ball into the centre hole for over an hour and a half excluding the time taken up by rest periods. Within the period some subjects had managed to perform this operation over 2,000 times.

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*Whipple's " Manual of Mental and Physical Tests : Simpler Processes," p. 151.

†*British Journal of Psychology,* Vol. XVI, Part III, p. 203.

The inter-correlations between the various tests are once more found to be low. We find that out of fifty-four coefficients seventeen are negative.

Examining Tables B and I we see that even with practice the inter-correlations between the four co-ordination tests are not materially increased.

Table J gives us the final reliability coefficients. We find that although with practice the inter-correlations between the various tests are not increased, the reliability coefficients of the tests are increased in spite of the fact that they were quite high at the beginning.

This can be seen from the following table :

TABLE K.

Test.	*Initial Reliability.*	*Final Reliability.*
A	.83	.911
B	.77	.797
C	.68	.801
D	.93	.972

CONCLUSIONS.

Since the tests do not correlate with one another positively to any appreciable degree, we are not justified in speaking of "*a*" motor ability but only of motor abilities.

When the range of tests had been limited to hand and eye co-ordination no high correlations were obtained. Even between two tests which were alike, inasmuch as they both dealt with stationary objects, or were tests of momentary adaptation, there were no high correlations.

From the point of view of vocational guidance, therefore, the above results tend to show that each specific combination of movements in any occupation will require a specific motor test.

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The Treatment of Secondary Schools' Admission Examination Scores.

By J. W. Collier.

One of the most important duties of a Local Education Authority is the selection of pupils capable of taking advantage of the relatively costly education provided in its secondary schools. This paper is concerned only with the after-treatment of scores obtained by candidates in written examinations, consisting of papers in arithmetic and English, and an intelligence test. It assumes that the examination papers are suitable and that the distribution of marks is normal.

1.—EXPRESSING SCORES IN GENERAL TERMS.

In a normal distribution, the marks show a tendency to cluster round a central point (most conveniently represented by the average or arithmetical mean), and it is believed that given a constant entry, year after year under the same conditions, of a large number of candidates drawn from the same sources, the actual performance represented by this central point varies less than any other factor in the examination. It follows that the most reliable value of any individual score is obtained by measuring its distance from the mean. The unit of measurement is derived from the dispersion or scatter of the marks, and the " standard deviation " (*sigma*) is generally used for the purpose.

2.—THE NEED FOR COMPENSATING FOR DIFFERENCES IN AGE.

The report of the Consultative Committee on " The Education of the Adolescent " makes the following reference : " It is not an uncommon practice to make a percentage allowance for each month below the maximum age of entry. Otherwise it is found that the candidates whose birthdays fall within a month or two of the maximum age secure an advantage over those born later." The extent of this advantage is illustrated by Table I.

TABLE I.

EFFECT OF RECKONING SUCCESS BY RAW SCORES IN ARITHMETIC AND ENGLISH. 2071 AWARDS ARRANGED ACCORDING TO MONTH OF BIRTH.* AGES RECKONED AS ON 1ST AUGUST.

Month of Birth.	*Percentage of Total.*
August	13.6
October	10.7
December	9.0
February	7.6
April	6.6
June	5.1

A year's work in school makes a great difference in a child's score. The average scores obtained by the same 310 children in two successive years were :

	Arithmetic.	*English.*
(*a*) Average Score, 1926	47.6	35.9
(*b*) Average Score, 1927	69.2	58.0
Average gain after correction (see I)	19 *marks.*	17 *marks*
r_{ab}	0.58±.03	0.40±.03

Intelligence test scores are compensated for age differences by converting each score into an *Intelligence Quotient,* which expresses the ratio between the candidate's mental age, as measured by the test, and his actual age. Observe the difference in the distribution of birthdays in Table II given by (*a*) Intelligence Quotients, which are adjusted for age differences, and (*b*) Unrevised Scores in arithmetic and English.

TABLE II.

DATE OF BIRTH OF CANDIDATES AT THE HEAD OF (*a*) AN INTELLIGENCE QUOTIENT LIST, AND (*b*) ARITHMETIC AND ENGLISH LISTS.

List.	*Score.*	*Percentage of Candidates born in :*				*Number of Candidates.*
		Aug. Sept. Oct.	*Nov. Dec. Jan.*	*Feb. Mch. April.*	*May June July.*	
(*a*) Intelligence Quotient	128 or over	25%	27%	26%	22%	292
(*b*) Arithmetic	80% ,,	40%	23%	23%	14%	274
English	65% ,,	37%	25%	25%	13%	232

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*Alternate months omitted to save printing space.

TABLE III. AVERAGE SCORES OF CANDIDATES GROUPED ACCORDING TO DATE OF BIRTH.

Month of Birth.	*Age at date of Exam.*	*Number of Candidates.*	*Average Arithmetic Score.*	*Average English Score*	*Scores reduced to terms of ς*		*Average I Q.*	*Scores in terms of ς adjusted for differences in I.Q.*	
	Y.M.				A.	E.		A.	E.
July	10.9	60	52.2	45.9	–.25	–.05	112.9	–.43	–.19
June	10.10	92	52.5	43.0	–.23	–.21	110.9	–.30	–.26
May	10.11	97	51.6	43.9	–.27	–.16	110.7	–.33	–.20
April	11.0	99	54.1	42.9	–.16	–.22	109.8	–.17	–.22
March	11.1	110	60.9	48.0	.16	.06	111.7	.05	–.03
February	11.2	110	57.1	46.4	–.02	–.03	110.4	–.06	–.06
January	11.3	91	55.6	46.2	–.09	–.04	107.3	.04	.06
December	11.4	108	55.6	46.7	–.09	–.01	108.9	–.05	.02
November	11.5	118	57.3	43.8	–.01	–.17	106.5	.17	–.03
October	11.6	122	62.4	49.5	.23	.14	109.9	.22	.13
September	11 7	126	61.2	49.8	.17	.16	108.7	.23	.20
August	11.8	125	62.6	52.9	.24	.33	110.0	.22	.32

3.—METHODS OF COMPENSATING FOR DIFFERENCES IN AGE.

Experience of intelligence test methods suggests that similar methods applied to arithmetic and English tests would give satisfactory results. Tests would be standardized, norms of performance ascertained, and "Arithmetic Quotients" and "English Quotients" calculated. *But the use of new tests every year by every authority is a wasteful process, for a test begins to be useful when we know what children can do with it. If by concerted action among authorities the number of tests used in any one year could be reduced, it is possible that a sound technique could be established.*

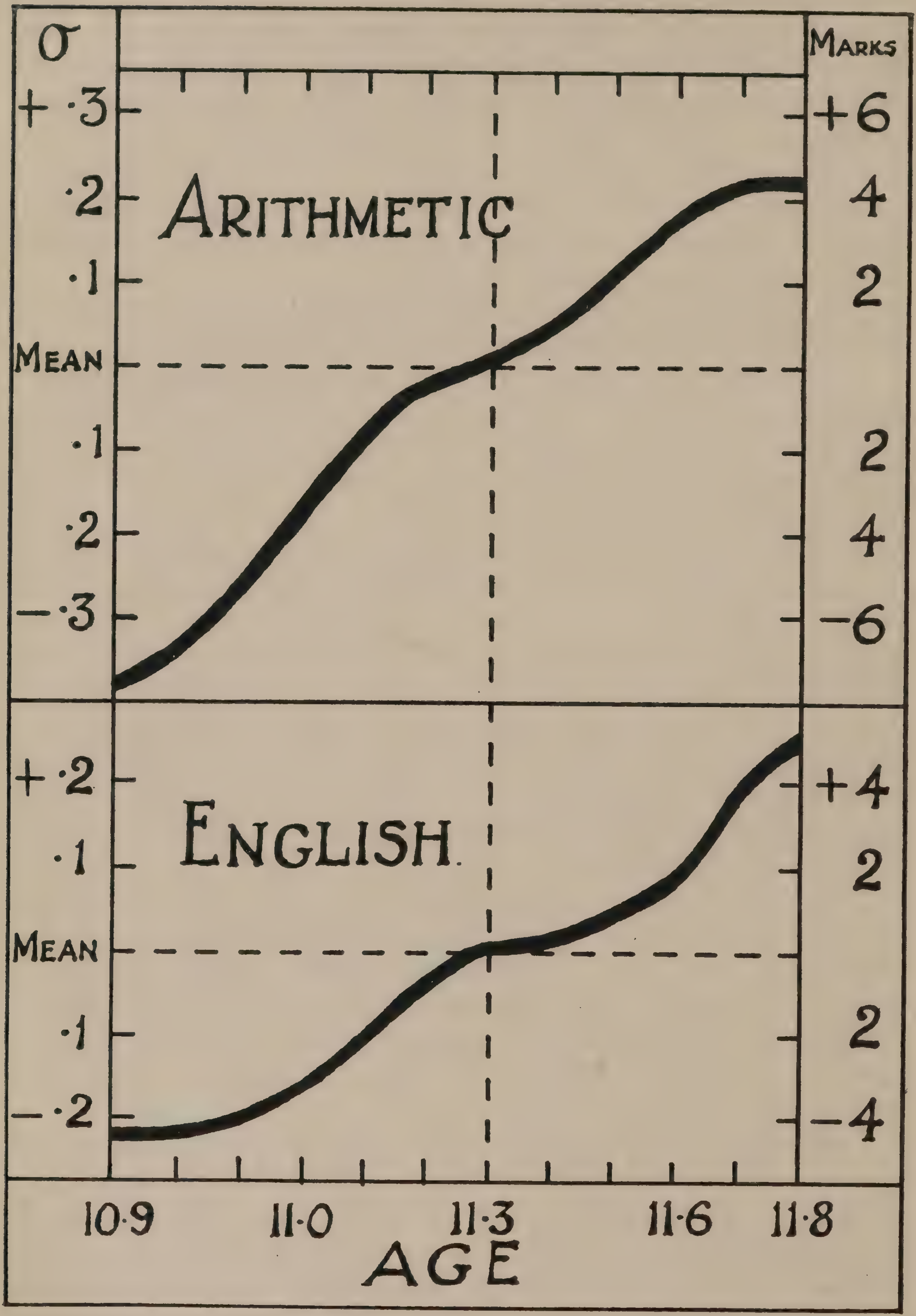
Meanwhile, we have to accept conditions as they are, and use such evidence as is afforded by the results of existing tests.

Table III is an analysis of the arithmetic and English scores of 1,258 candidates of the normal age, i.e., candidates who would have been over the maximum age at the next examination. In columns 4 and 5 are the average scores of the candidates born in each month. In columns 6 and 7 the principle stated in (1) is applied in order to bring the scores to a common standard. It is not possible to isolate the effect of differences in age from all the other influences affecting a child's performance in the examination, but the effect of differences in capacity can be eliminated by using the information given by the candidates' intelligence quotients, the averages of which are given in column 8. The regression coefficients obtained by correlating the intelligence quotients with the arithmetic scores and with the English scores show the average increase or decrease in marks accompanying a given increase or decrease in the I.Q., and the correction so indicated is made in columns 9 and 10.

The smoothed curves derived from columns 9 and 10, shown in the diagrams, are an approach to a statement of the influence of differences of age on the examination results, irrespective of variations in the standard of marking and in the capacity of the candidates. Calculations have been made in terms of *sigma*, but a scale of marks, based on an assumed *sigma* of 20 marks, is inserted on the right to illustrate the result in marks.

The diagrams point to the conclusion that for a set of children whose ages extend over one year at about age 11, *an average allowance of, for arithmetic, one twentieth, and for English, one twenty-fifth, of the standard deviation, per month, is a close approximation to the required adjustment.* It would be a great step forward in the improvement of admission examinations if this simple statistical calculation could be repeated by a large number of examining authorities to

Effect of Age on Score.



ascertain whether these *sigma* unit age allowances, modified in the light of such wider data, could not be universally adopted.

Varying the allowance by making it depend upon the marks actually scored—in other words, adding a percentage—is attractive in theory, but does not seem to be supported by facts. A correlation table between the arithmetic marks scored in 1925 and in 1926 by the same 371 candidates, in which the correlation co-efficient was high ($r=0.71\pm.02$), shows the following :

Score in 1925	65	60	55	50	45	40	35	30	25	20
Increase in 1926	19.0	20.3	25.7	26.6	26.8	29.6	31.2	32.2	35.0	31.6
Number of candidates	15	16	22	39	33	42	49	34	37	31

In considering age allowances, it must be remembered that an allowance cannot be extended down the range of age indefinitely : a point is reached where the child is not sufficiently mature to benefit by secondary school education.

Assuming that the policy of an authority is to deal thoroughly with one main age-group, 11+, each year, with in addition any younger children who are regarded as mentally 11+, it is suggested

(1) That the allowance for age should be zero at the median age, say 11 years 6 months.

(2) That a deduction, increasing with age, should be made from the scores of children aged 11 years 7 months to 11 years 11 months.

(3) That an addition, increasing as the age decreases, should be made to the scores of children aged 11 years 5 months to 11 years 0 months.

(4) That a candidate aged 10 years *x* months should suffer the same deduction, or receive the same allowance, as a candidate aged 11 years *x* months.

The principle stated in (4) can be applied to intelligence test scores, by calculating the I.Q. of ten year old children as if they were eleven years of age.

There is here an apparent injustice to the child aged 10+ compared with one aged 11 years 0 months. But the object of admission examinations is not to discover ability only, but ability combined with a degree of mental maturity, and the purpose of an age allowance is not to put successive yearly age groups on an equality, but rather to minimize the unfairness of examining on one fixed date candidates whose dates of birth are spread over a whole year.

4.—COMBINING THE REVISED SCORES.

Any combined score or total used for ascertaining the order of merit for the examination as a whole should have the same value for any combination of marks. It should also approximate to the same value year after year, if standards are to be stabilized. The revised scores should therefore be arranged in fresh distributions, and a second correction applied. The nature of this correction is indicated in (1), and what may be termed the "scale value" of each score is found by deducting the mean and dividing by *sigma* (or for a convenient working scale by one-twentieth of *sigma*). For example, where the mean is 45 and *sigma* 15, the "scale value" of a score of 75 is $(75-45) \div 15/20 = 40$. If the number of scores to be converted is large, a ready reckoner is easily constructed.

5.—WEIGHTING THE SCORES.

In the preceding paragraph it has been assumed that equal weight should be given to Arithmetic, English, and Intelligence Quotient. The assumption may be quite wrong. The purpose of these examinations is to forecast the ability of children to take advantage of a secondary school education as at present organized, and it is not safe to assume that each part of the examination is equally successful in that purpose. A comparison between the results of admission examinations and subsequent secondary school records is required, and there is a wide field for enquiry in this direction.

Recent Developments in American Universities.

By Meyrick M. H. Carré.

The situation in the universities of America deserves wide attention. The pressure of democratic sentiment on higher education and scholarship may there be witnessed on an unprecedented scale, and in a form more insistent, more direct, and often, it must be confessed, cruder than anywhere else in civilization. The results are institutions which in range of popular support, in splendour of equipment and endowment, and in effective economic influence, are the admiration of the world. Seven hundred and fifty thousand young persons, at a moderate estimate, are now attending colleges in the United States: a ratio, for 10,000 of the population, of seventy, compared with fifteen for the British Isles. Benefactions in a single year amount to 82,000,000 dollars; a State legislature votes 12,000,000 dollars as biennial contribution to its public university. Such statistics may be multiplied to the chagrin of countries less wealthy—or with a less robust faith in education. It is common knowledge, however, that this enviable position is maintained at considerable academic cost. Indeed the volume of discussion, lurid, satirical, or judicially critical, on the colleges of the country which pours incessantly from the American Press, renders second-hand trans-Atlantic criticism singularly otiose. But what are interesting, and what frequently escape the critics, are the attempts which are being steadily pursued within the universities to meet the difficulties, while preserving the benefits, of popular support. The problems traverse educational tradition, university aims, and political beliefs.

For the difficulties raised by the enormous increase in the number of undergraduates cannot in America be met by considering them, as in England we are disposed to consider them, only from an educational point of view. They must be conceived as part of a general social movement of which the scholastic interest is one phase. The President of the University of Illinois expressed a common view when he wrote: "The people are now asking that their children shall have a minimum education beyond the high school . . . They will not permit the movement to be checked by any alleged pedagogical difficulties."

This means that entrance qualifications cannot be the chief point of attack upon the problems which are raised by the popular pressure. In this matter there is a marked difference between the State and the privately endowed institutions. The former admit on diplomas from high schools accredited and inspected by themselves. These diplomas guarantee that the appropriate number of subjects required by the university have been covered, the calculation being on a time basis. For example : " Fifteen units of secondary school work in acceptable subjects must be offered by every candidate. A unit represents the work of 180 recitation periods of forty minutes each, or the equivalent in laboratory or other practice." Some of the State universities are now moving to influence the quality of these diplomas in two ways. With the co-operation of the schools they are seeking to restrict entrance to the upper fraction of the graduating school class, and they are suggesting in some detail the curriculum to be followed by the schools in the fundamental subjects required for admission. These tendencies are, however, regarded with suspicion by such whole-heartedly democratic universities as Illinois. The " endowed " universities admit also in part on school diplomas, but they are naturally proceeding further towards a selective machinery. They are adopting general examinations, in which the subjects of English, Mathematics, Latin, and a Foreign Language or a Science are cardinal. The policy of these college entrance examination boards, with which a growing body of colleges are grouping themselves, is to provide an examination sufficiently comprehensive to test intelligence rather than memorized information. Some, however, following the lead of the State universities, especially those in the west, are substituting modern and commercial studies for the traditional prescribed subjects. Between 1895 and 1914 the number of universities in America requiring Latin for entrance was reduced by half. The amount of subjects taught in the schools, it may be added, which are recognized as qualifying for admission by the universities now reach a total of over fifty.

More important are the movements in progress within the universities to co-ordinate and deepen the programme of courses, to evoke the full powers of abler minds, and to establish more sympathetic methods of teaching. One plan which is making considerable headway throughout the country, and particularly in the west, serves to define the standards of the university by separating from it in junior colleges the first two years of the undergraduate course. The work of these years may thus be more closely articulated with the general education of the high schools ; while it seeks to avoid, on the other hand, the premature influences of later more specialized studies. Further, there is a large and increasing number of undergraduates in American universities who take only two out of the four full years of college work, and for whom the junior colleges are at once more accessible and more suitable than the universities. It is estimated that there are more than 250 of these institutions now in operation, of which at least 160 are unconnected with universities. The movement, like every educational re-alignment in the United States, is not advancing without continuous and searching protest, which fastens particularly on the instructional methods of these colleges.

The trend which groups the first years of college life with the liberal education of the high schools is accompanied by the movement to absorb the senior years into the graduate school. The Johns Hopkins and Leland Stanford Universities, for example, propose in future to admit students only after graduation from a college. Students at such institutions will proceed only to the degrees of A.M. and Ph.D. This scheme is in line with the traditions of American Universities whose chief academic strength, in comparison with British institutions, has lain in their great graduate schools.

Of deep interest to university teachers are the plans which are being devised in American Universities to promote closer relations between teacher and student. These experiments aim, however, not only at obviating wholesale methods of instruction, but in modifying the diffused effects of the elective system. Discussion with tutors by small groups in connection with the lecture courses has been repeatedly tried—it was introduced by Mr. Woodrow Wilson at Princeton, in 1906. But it has been recently revived, notably at Harvard in conjunction with "fields of concentration." These fields mean large co-ordinated systems of study in history, science, or literature, pursued over two years and followed, in place of the terminal course examination usual in American universities, by a comprehensive examination at the end. The tutorial system, as President Lowell insists in a recent article on the subject, follows upon the general examination. For the general examination requires more than information and memory. It requires judgment, a quality that springs from informal dialectic and independent reading. At Harvard tutors are appointed from all grades of the faculty, and many professors are serving in this capacity. The tutorial system has been described by one authority as the next great experiment in American education.

But Harvard and a number of other universities and colleges have gone further than this. Most universities allow for recognition of candidates for honours upon the basis of their scholastic records ;

and some exception from the routine work of the courses is allowed such students in their first year. But the frank distinction of pass from honour courses is a further step. Here the lead has been taken by Swarthmore College. Students are admitted after careful consideration of their qualifications to an honours course at the end of their second year of college. The fields of honours study are not confined, as in the English tradition, within the limits of a single department. The honours course in English, for example, includes literature, history, and philosophy; in mathematics it includes physics and astronomy. Honours students are given great freedom in the matter of attending lectures; their main teaching is conducted by means of tutorial seminars. At the end of the two years of honours work the candidates undergo a rigorous examination, and the results are published in the form of four honours classes, as in the Oxford tradition. In connection with these honours examinations Swarthmore has adopted a further feature of the English system upon which much emphasis is laid, though it has not so far been followed by other colleges which are adopting the honours plan. The main business of the honours examinations is placed in the hands of professors from other institutions, with whom lie the chief duty of determining the class of the candidates.

It will be observed that the movements which have been touched upon point in two somewhat divergent directions; that one is a revival of the German university idea, stressing post-graduate and professional studies, while the other takes the English system, and particularly Oxford, as a guide. But the latter is by no means a duplicate of English methods, for the general situation in which it is applied, where far less preliminary selection is possible or desired, is very different. And the breadth of content of the new programme, a merit indeed inherent in the American curriculum, constitutes a positive advantage over English university courses.

Other innovations in the American colleges deserve attention, such as orientation courses and freshmen weeks. But the most thorough experiment in the field of university education is the establishment of the experimental college at the University of Wisconsin under the direction of Mr. Alexander Meiklejohn. The college began its work at the opening of the academic year 1927-1928. Its purpose, as stated in the faculty resolution by which it was set up, is "to formulate and to test under experimental conditions suggestions for the improvement of methods of teaching, the content of study, and the determining conditions of undergraduate liberal education." A body of 120 average students have been segregated during their first two years of undergraduate life, residing together and in close touch with their tutors. The method of instruction is by small groups, and a large related area of experience—for the first year, the civilization of Greece—is in course of examination from several angles. It is intended that the tutors should share as fully as the students in all parts of this unified plan. The progress of this experiment will be watched with interest by university teachers in both countries.

The Function of the Two-Year Training Colleges.

By E. M. Jebb.

The 1925 "Report on the Training of Teachers" drew attention to the distraction of aim and the mixed function of the two-year training course. The Committee pointed out that a training college should be solely concerned with professional training, not with providing facilities for a general education. Obviously much time is at present spent in the two-year college on studies which bear no immediate fruit in the student's practical work. The remedy suggested by the majority of the Committee was that the training college should hand over its strictly non-professional duties to the secondary school. It was argued that if intending teachers had the benefit of a full-time secondary education to the age of eighteen, the training college could concentrate on its true function—that of furnishing professional equipment and helping the student to face the practical problems of the elementary classroom.

There was indeed a certain difference of opinion among the members of the Departmental Committee. The majority recommended a two-year professional course with a latitude for a further academic study in *one* subject. The minority suggested a one-year training course of a purely professional character, with the recommendation that the school leaving age should be extended to nineteen. But, while differing in detail, the Committee were agreed that the training colleges should restrict themselves more than they had hitherto done to the professional aspect of their work.

To many of us in the training college world these recommendations seemed unsatisfactory—not from any jealous desire to conserve our dual function, but from a conviction that the secondary school, however well equipped and efficiently staffed, is not the place in which the intending teacher should complete her general education. Few would combat the assertion in the report that "the highest degree of efficiency in the national system of education . . . can only be expected when each part performs its proper and distinctive function," but it may be argued that to merge into one the functions of school and university is even more unsatisfactory than to merge those of university and training college. The basis of a liberal education must indeed be laid in school, but the university is the place where the spirit of free enquiry, the habit of independent study, and the love of knowledge for its own sake are best cultivated and encouraged. And if the mass of our elementary teachers must still forego the benefits of a university education then they should at least have the opportunity of pursuing their studies to a further stage in those particularly important years between school and the beginning of a professional career. To say this is not to underestimate the work of the secondary school, but only to recognize its true scope. The proper function of the Sixth Form is to prepare for the university, not to provide the equivalent of a university training. The break with school, the stimulus of new surroundings, new teachers, new methods, would seem essential for the adequate pursuit of those studies which belong to the young teacher's general education. Even if it could be assumed that all entrance candidates had reached the standard of the second school examination it would be difficult for the training colleges to accept their general education as in any sense a *fait accompli*. And a large number of our students have still only attained the standard of the first examination.

At this juncture with the promise before us of a close association between the training colleges and the university, we naturally all seek afresh for some solution of our problems. In the two years at our disposal how can we best secure to the student a continuation of her general education and at the same time fit her for her professional career ? Miss Mercier in her paper on " The Training College Curriculum," published in *The Forum* for February, suggests a course which promises to secure to the student " the intellectual training appropriate to the university stage," and which shall centre upon " the practical study of how a child lives and learns and grows in health and happiness as a member of a school community." With Miss Mercier's sketch of the intellectual attainments of the ideal training college product few of us would disagree—that " she must be free of the world of books herself, capable of discernment, criticism, and discussion "—and that " she no less than the university student must enter into her heritage of culture and knowledge." But can this ideal, if indeed it is attainable at all in two years, be attained along the lines suggested by Miss Mercier ? Her special proposals which seem to challenge criticism are : (1) That the whole course, not part of it, should be vocational ; (2) that the development of the student's own knowledge of a subject should proceed together with her study of its possibilities as a teaching subject ; and (3) that the curriculum should be homogeneous and inter-related.

It is Miss Mercier's view that there is no real division between academic and professional studies, that while the student explores the teaching possibilities of a subject she can *pari passu* acquire the insight into it and the knowledge which should form part of her own liberal education. But is this the case? Can any insight be gained in the study of an art or science unless for some time after leaving school the student concentrates solely on the subject itself? The student of eighteen has reached a different stage of mental development from that of the ten or even fourteen year old child. Experience tells us that alike in content and method the study of any subject must vary with the age and mental development of the student. We violate the very principles of psychology which we profess when we attempt to teach the eighteen-year old student along the lines appropriate to the school child. Miss Mercier admits indeed that in every subject the syllabus should " in scope and difficulty go far beyond what is required for any class lesson," but if the student is to have " the intellectual training appropriate to the university stage " she must for a time turn her back altogether on the class lesson. It is to be doubted if anyone can be a successful teacher in a subject if she has not at some time or other during the college or university period been more interested in her subject than in her pupils. We only learn the full educational possibilities of any subject when we have discovered what it can yield of wealth to ourselves. Hence Miss Mercier's contention that the development of the student's own knowledge should proceed together with her study of its possibilities as a teaching subject seems open to serious criticism. The student should surely not be continually turned from her book by having her eye directed to the class room. She must first know, then learn to teach. To ask her to do both in one and the same course is to insist on a distraction of aim which it is the object of Miss Mercier's scheme to avoid.

Lecturers in training colleges would welcome further exposition and illustration of Miss Mercier's interesting suggestion of " the homogeneous and inter-related syllabus." Will it serve its purpose of fostering a central intellectual interest and of breaking down the water-tight compartments between one subject and another which exist in the student's mind? The danger at least in the arts subjects would seem to be that such a course would confuse the student's values. Literature, for example, as Miss Mercier reminds us, embraces in poetry and tales both history and geography, but literature is not necessarily the handmaid of other subjects. The student who insists that " Chaucer wrote his Canterbury Tales to illustrate the social life of his day " is not much wiser than her less well-informed fellow who can see no relation between fourteenth-century England

and that famous ride to Canterbury. Many of us are familiar with the lesson on " Sir Patrick Spens " in the elementary school room which is introduced by a map of Scotland and a careful estimate of the exact distance between Dunfermline and the coast of Norway. The study of literature in the elementary school to-day suffers severely from the teacher's tendency to regard the poets and imaginative writers solely as useful though sometimes inaccurate guides to the study of history, geography, botany, and other subjects.

Wrong valuations may be as serious a handicap to the teacher as rigidity of mind. It would seem difficult to frame a homogeneous course say in history and literature without omitting much that was of value in the development of literary appreciation or of significance in the study of history.

The intelligent study of any subject should show its relation to other aspects of knowledge, and it may be questioned whether the student's mind is not more enriched by the separate study of a limited number of subjects than by the homogeneous course. Miss Mercier's plea for such a course for the student seems to rest largely on the need for it in the elementary school. But this again is to argue the intellectual needs of the eighteen-year old student from those of the school child.

To sum up—the plea put forth in this article is that the needs of a liberal and general education cannot be considered in terms of a vocational training—even if the term " vocational " be interpreted with the wide significance allowed it by Miss Mercier. The fundamental weakness in elementary education to-day springs from the lack of sufficient general education among our teachers. It is, as Miss Mercier implicitly admits, the educated mind and outlook *behind* the content of any particular lesson which is the real educational force in the schoolroom. And such an outlook can best be secured by that development of special gifts which is part of a liberal education. Let us for the present accept our dual function and our dual aim. We will distract the students less if during the two years we allow them some time to concentrate on their own education than if we are continually focussing their gaze on the school child. It is well to remember that the Departmental Committee of 1925 were strictly limited in their findings by financial considerations. We may look forward, though in the distant future, to a more generous educational policy which will accept the recommendation, already largely recognized in Scotland, that " No attempt should be made to educate teachers and simultaneously to train them in their art. Two qualifications should be required of them. Firstly, a degree—the hall-mark of their general education; secondly, a certificate or licence to teach—the guarantee of their professional capacity."* When that time comes the training college will be able to concentrate on its proper function. Meantime our association with the universities should give us help and encouragement in pursuing our general educational aims. And in pursuing these we shall best help forward the work of the elementary school.

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*"The Education and Training of Teachers." (Published by the Trades Union Congress and the Labour Party.)

Psychology of Secondary Education.

By Charles Hubbard Judd, Professor of Education and Director of the School of Education of the University of Chicago. (Ginn and Company. 10s. 6d. Pp. xiv and 545.)

THIS book has grown out of the use of Professor Judd's "Psychology of High-School Subjects," with twenty-four classes of advanced students, and is intended to take the place of the earlier volume. With the exception of a few pages it is a new book. Its main chapters deal with the psychology of secondary school subjects: Mathematics, English and Foreign Languages, Natural Sciences, the Social Sciences, Physical Education, the Fine Arts and the Practical Arts. It weaves these into a fairly coherent theory of education based on the assumption that social institutions such as number, language, customs, are more significant than are individual modes of thought and behaviour. Education is not so much an unfolding as a process of "*changing* the individual from a natural individual responding to personal impulses to one who conforms to social demands. In the analysis of the various mental processes, however, there is such a definite point of contact with the individual's *personal* impulses and, moreover, Professor Judd's views of social institutions are so broad and general that even the enthusiastic advocate of individuality will find little to object to in the book as a whole. "The school aims to carry on its work in such a way as not to stifle the pupil's personality, but it does not determine its lines of instruction by attending chiefly to the pupil's desires." (page 29.) This may be a true formulation of present practice, but the author's ready acceptance of it as final leads him occasionally to statements that merely illustrate its extreme difficulty, or to points of view that do not readily agree with a practice based on the study of the pupil's mental processes. In the case of languages, emphasis is placed on the differences of individuals: "Different individuals have their own private methods of responding to different words," while in those cases "in which the individual learns to reason geometrically he adopts a form of thought which is superior to anything that he, as an individual, could invent." He deplores (page 357) "the narrow dogmatism of scientific specialists which leads them to ignore the clear teachings of the science of psychology and to insist on absolute acceptance of their personal and wholly unscientific views regarding immature minds," yet in speaking of lack of system in the teaching of elementary science he argues that if teachers do not organize the items of information into coherent systems, "children will try to do so and will lose the advantages that come from the guidance which mature experience is prepared to supply through its organized schemes of thinking." (page 47.) These difficulties of individual *v.* communal methods of thinking, of the specialist *v.* the general demands of the community, may be reconcilable in practice, but it must be admitted that Professor Judd in many cases states problems rather than solves them. Thus : " How to give the pupil guidance without making him utterly dependent, how to use words without allowing them to absorb the pupil's attention . . . these are the problems which every teacher must try to solve." (page 106.) " If there can be found a proper balance between the tastes and interests of the pupil and his objective needs, and if there can be provided some guidance to direct him in a way that is superior to his own free choice, the elective system will continue to be a source of very great advantage to the school organization." (page 464.)

The chief value of Professor Judd's book for students of education will be found in the many novel points of application of theory to practice which it suggests. It will give to many theoretical points a new interest and a new meaning, and it will do much to encourage the practical teacher to inquire into the kinds of activity which each lesson arouses, and the mental processes which it is intended to induce—" the only certain bases for the proper organization of the programme of the school and for the development of efficient methods of teaching." One of the most important recent applications of experiment both to theory and practice is described in the author's study of the nature and development of reading, and his method of photographing and recording the movements of the eye in the reading of English, Latin, and modern languages gives a new and a most interesting, if inconclusive, method of attacking the vexed question of ancient *v.* modern languages. Professor Judd thinks that his investigation " makes it clear that most pupils do not read Latin." While the reading of very difficult passages in English sometimes requires as many as fourteen eye movements a line, of technical material such as algebra seventeen fixations a line, it is found that good pupils in their third year of study make forty or more fixations in attempting to read a line of Latin. After an interesting and all too brief survey of the usual methods of learning Latin the author concludes : " Thus, we find in a discriminating study of the mental habits of pupils the explanation of the fact that American pupils do not read classical languages and do not, except in the most unusual cases, reach the stage where there is any direct appreciation of the literature which is expressed in these languages." (page 237.)

One of the most stimulating chapters deals with " generalized experience," and it not only reviews but disputes most of the current theories. The author quotes, we think with approval, President Hadley's plea for the retention of Greek as a discipline : " The ideal college education seems to me to be one where a student learns things that he is not going to use in after life by methods that he is going to use. The former element gives the breadth, the latter element gives the training." Professor Judd finds in generalization the goal of education and argues that the equipping of the individual with the powers of thinking abstractly and of forming general ideas must of necessity lead to transfer because it is of the very nature of these powers to extend beyond the particular experiences in which they originate.

In addition to the topics already noted the author deals with the social and intellectual aspects of maturity, with the general content and methods of educational psychology, and with the psychology of teaching and administration.

W. J. M'CALLISTER.

The Mind.

A Series of Lectures delivered at King's College, University of London. Edited by R. J. S. McDowall. (Longmans. Pp. 316. 8s. 6d.)

It was a happy thought that induced Professor McDowall to suggest that a series of lectures on mind be given at King's College, London, by accredited representatives of various fields of thought each from his own standpoint, and psychological literature is the richer for the publication of these lectures in book form. One might question the wisdom of taking the opinion of a layman on a subject on which expert information is available: why not invite representatives of the various academic interests to a symposium on energy, matter, polymerization, evolution, or conditioned reflexes? Mind, however, is in a category by itself; it is a subject in which all are interested; we all claim to have inside information about one mind and to know much about others; indeed, the study of the minds of others is of such great practical importance that even the professional psychologist can learn something from the speculations and observations of others, and when these come from men of such eminence as those who delivered these lectures, they form very interesting reading.

There are here ten lectures: Professor Huxley writes from the point of view of biology, Professor McDowall from that of physiology, Dr. Aveling of psychology, Dr. Hadfield psycho-therapy, Professor Lindemann physics, Dr. Matthews philosophy, Professor Dover Wilson education, Mr. Collingwood æsthetics, Professor Seligman anthropology, and Professor Hobhouse sociology.

At the outset the lectures give the impression that is produced by a variety performance or a students' debating society, but that soon gives place to an air of serious thought: a certain amount of agreement emerges and each makes a valuable contribution to the protracted symposium. The variety of thought is itself refreshing.

Professor Huxley leads with a lecture which has all the certainty and breadth of vision of youth. The material and the mental are, he says, inseparable: the concept of evolution must be applied to minds as well as to bodies, the principle of continuity demands it; although we cannot picture the consciousness of a bird, frog, crayfish, earthworm, jelly-fish, or sponge, we must assume in them some mind-like qualities. In his discussion of the nature and functions of the sense-organs, the nervous system, animal behaviour, tropisms, reflexes, and instincts, he gives a very clear and valuable account of current biological thought, and succeeds in cramming into a few pages a truly amazing amount of information.

Professor McDowall introduces a certain liveliness into the series by reviving the automaton theory of mind. Thought, he says, is a function of the nervous system ; it depends on the brain, which acts on the same general principles as the other parts of the nervous system ; it is purely automatic, and man's conception of mind is the greatest evidence of his conceit. If anyone dares to object that we owe our knowledge of the existence of the brain to mind, the learned professor offers to convince him of his error by compressing his carotid arteries. Voluntary action is an illusion, for we can see the cause of it in others, and consciousness has no special significance. Curiously enough, he is not consistent even in the exposition of his purely mechanistic concepts : he writes, " The stimulus is received, it is brought into relation with the experience of past stimuli, its significance is determined and a response given," and " This material conception of the working of the brain is not in any way contrary to the holding of religious belief ; on the contrary, it indicates that a man wandering about in a natural world and having impressed upon him law and order in nature from his knowledge of his own affairs, where he knows law and order are dependent on human activity, must be driven to a conception of a guiding and supreme power. This conception is reinforced by the stimulus of history as set forward in the New Testament and its relation to the teaching of earlier writers." "Our higher ideation may succeed in influencing the effect on our nervous system." " Man has incurred certain moral obligations as a result of the power of his nervous system to form associations."

Professor McDowall must here be playing the part of *advocatus diaboli* : as originator of this series of lectures he probably thought it necessary to stimulate activity by reverting to a conception which not only flouts common-sense, but runs counter to current tendencies in psychological, philosophical, and general scientific thought. He certainly succeeds in baiting Dr. Aveling, for the latter's lecture is a serious refutation of epiphenomenalism and a vindication of the idealist theory that the facts of direct conscious experience are primordial, fundamental, indubitable, and that " the brain and the nervous system only exist for us in so far as they are known—in so far as they are mental objects and not physical ones." " Epiphenomenalism in view of the fact that matter, as we know it, is a construct of mind, is an ingenious theory, akin to that in which the world is made to rest upon a tortoise." Incidentally, Dr. Aveling gives a masterly, incisive account of the scope of psychology, its methods, and subject-matter.

Professor McDowall's theory receives short shrift from subsequent speakers : it receives so many kicks that one becomes almost sympathetic towards it. Professor Matthews calls it meaningless, Professor Wilson describes it as dangerous, and Dr. Hadfield turns the table on McDowall by showing that physiology cannot even offer a direct proof of residual change in the nervous system such as can form the basis of memory, and that the discovery of thought by physiological methods has never so much as been suspected.

One of the most interesting lectures and most significant of the tendency of present-day thought is that of Professor Lindemann on mind from the physicist's point of view. In it he shows that there is no certainty that the indefinables employed in the statement of the so-called physical laws have any fundamental significance beyond their appeals to the mental preferences, prejudices, or infirmities of the physicist, and that some of the laws of physics, e.g., the law of the conservation of energy, are in great part mental.

The polemical spirit disappears entirely about the middle of the book, giving place to a serious and valuable attempt to view the problems of mind from the points of view of other sciences. Each contributor succeeds in showing that psychology and his own subject react on each other to their mutual advantage.

Mr. Collingwood laments the absence of a normal psychology of the imagination, and suggests that æsthetics supplies the want. Mind is creative ; it makes a world of its own and creates its own environment in which it expresses in every detail its own character ; and it is this creativeness that forms the subject-matter of æsthetics.

Professor Seligmann develops the views put forward in his Presidential Address (1924) to the Royal Anthropological Institute on the mental traits and modes of thought of European and non-European races and their relationships to one another. He rejects Levy Bruhl's theory that the more primitive races think in a manner different from ourselves, that their thought-processes are mystical and "pre-logical," and shows that the temperamental differences which appear in the painting, poetry, and philosophy of the Mediterranean and Nordic races of Europe are paralleled by similar differences in the work of the peoples of the East.

Professor McDowall is to be congratulated on having done more to popularize and establish the value of the psychological point of view than can usually be done in a technical thesis by a professional psychologist.

Shepherd Dawson.

Mind and Personality.

By William Brown. (University of London Press, London. 12s. 6d. net.)

The author has given us an interesting collection of papers arranged to reveal an underlying philosophical argument. He speaks of it as an *interim report* on work done in addition to his duties as academic psychologist and practising psychotherapist, and we look forward to a *final report* in which there will be no doubt as to what are the author's considered findings. We have read and re-read the book with great interest, but have been unable to shake off an early impression that here we have the philosopher thinking aloud, in his endeavour to secure a reasonable theory, rather than the scientist presenting, in clear cut argument, a satisfying theory that has taken definite shape.

We are even in doubt as to the meaning of the title : " Mind and Personality." Are mind and personality contrasted or are they alternative names of the same entity? " Personality "—i.e., " Mind," would seem a satisfactory title for much of the book, but every here and there we seem to run up against a possibility that, after all, for the author, personality is the person using the mind : *the being* behind *the mask.* The author seems to face our difficulty when he declares that " the problem of personality falls under two main heads—the nature of the subject—the structure of the mind " (p. 52). The second of these is stated to be the basis of discussion. We had hoped that when personality had been linked with *persona*—a mask—it was preliminary to an attempt to deal with the problem of what, if anything, is behind the mask ; but apparently the author is only reluctantly forced into a passing consideration of the theory of a transcendental ego and is throughout concerned principally with " The self, the mind that psychology deals with " (p. 297). On the other hand, as able a critic as the editor of *The British Journal of Medical Psychology* has reached the conclusion that " In the earlier chapters personality is used mainly as a psychological term ; towards the end it is used exclusively as a philosophical term (Vol. VI, Part IV, p. 295).

The difficulty is increased by the fact that the author claims that definition of personality is impossible (p. 2). His task, however, is clearly defined as " taking the developed human mind in its unity, and considering this mind scientifically from . . . the points of view of biology and physiology, of the various schools of psychology, psycho-pathology, logic, ethics and metaphysics, and finally from the point of view of the theory of religious experience ; always with the object of working out some sort of harmony from these conflicting opinions " (p. 2). " Mind in its unity " or " The concept of mental unity " is the " general guiding thread in the discussion," the main outline of which we will endeavour to summarize.

Consideration of the mind in relation to the nervous system and physical organism leads to a definite rejection of the mechanistic or automatic theory that mind can be fully explained in terms of physiological chemistry and physics, to criticism of the theory of psychophysical parallelism as a possible statement of the problem and tentative acceptance of the theory of interaction as the best working hypothesis, although it commits us to the assumption of a " soul as distinct from the brain as another substance " (p. 29).

The organized self as it appears to the psychologist is considered and gives mind " as a system of subsidiary systems of conative and emotional dispositions, organized in relation to a hierarchy of cognitive dispositions " (p. 79). Instinctive dispositions are organized within sentiments or interests and finally subordinated to " one all satisfying interest." MacDougall finds in the self-regarding sentiment the master interest, but " love of Truth as such, or of Goodness as such, is higher than mere love of Self, even in its highest form " (p. 64).

The normal development of personality involves the recognition and acceptance of logical, æsthetic, and moral values. Departure from accepted ideals of action results in the pained conscious feeling of " conscience." Hence, " Conscience is an important factor in self-determinism " (p. 188). " But conscience and moral obligation cannot be explained in merely psychological terms " (p. 192). We pass from psychology to ethics.

Satisfaction of the desire to do what is right and reasonable is an essential value of the higher life (p. 227). Consideration of this essential value involves the problem of freedom and disagreement of the author with Sidgwick's contention that this problem is of little importance to ethical theory. " It seems . . . that the truly ethical outlook on life is bound up with belief in self-determination, in the power of the mind to act from itself, from within itself. . . . In truly moral action you realize its rationality, but more . . . you realize its value, and you have in you some direct power of realizing its value. This is called conscience " (p. 295). Also ethics involves intuitionism—a feeling of absolute obligation for which no reason can be given. This, or that, *must* be done

" because it is my duty " (p. 293). The principles of duty may be summed up in the words " Seek always the highest good " and this " leads to anything rather than to a comfortable egoistic doctrine of self-culture " (pp. 225-6).

The consideration of personality involves yet another step, and one that takes us still further from the paralyzing certainties of science. We pass from ethics to religion—" the most important thing in life " (p. 268). " A very high degree of ethical excellence " is not necessarily accompanied by " intense feeling or conviction . . . towards the totality of things " (p. 299). " There are three general all inclusive attitudes towards the universe . . . cognitive . . . æsthetic . . . ethical," but over and above these is the attitude involved in " the experience of personal relationship towards the universe as that upon which we completely depend," the experience of " creature-hood " and its accompanying dependence on God and " feeling of mysteriousness, of majesty, and of fascination in which fear and attraction are blended." Man passes beyond the plane of ethical values to the religious attitude (pp. 257-8).

In this difficult field of enquiry explanatory " theories " of science, the " perhaps " of philosophy and " faith " of religion interweave in a screen that makes possible brief contemplation of the Great Unknown, and the author, following Aristotle, Browning, and F. H. Bradley, reaches doubt in the reality of personality and faith " that perfection—i.e., God—exists and that we may . . . participate in that perfection and thus, and only thus, achieve realization of our inmost personality " (p. 307).

The mystical theory of ultimate absorption into the One Personality that emerges is not readily reducible to intelligible form. It is on the intuitional rather than on the rational plane. Probably for very few has it any real meaning or value, and it is somewhat with relief that we fall back with the author to a more pragmatic level and " feel " the reasonableness of his conclusion that " the more sincere we are with ourselves in working out and applying the doctrine of values, the more do we realize that there is a force greater than ourselves, not only individually but also collectively, working towards a realization of these values. We advance inevitably from a religion of humanity to a religion of God " (p. 318).

R. J. BARTLETT.

Book Reviews.

New York Experiments with New-Type Modern Language Tests : by Ben D. Wood, Director of the Bureau of Collegiate Educational Research, Columbia College. (New York : The Macmillan Company, 1927. Pp. xxii+339 ; Paper covers, 4s. 6d. net.)

This monograph is the first of a series to be issued by the American (i.e., U.S.A.) Modern Language Committee in conjunction, one gladly notes, with the Canadian Modern Language Committee. It gives a description of new language tests, to which the epithet " objective " has been attached—the exact answer to each question, with some exceptions, being handed to the examiner before he commences marking. These were constructed according to technical methods tried and validated during the four years preceding 1927 by the Columbia College Research Bureau for testing achievement in modern languages : the languages referred to in this book are French, Spanish, and German. The tests are given in full on pages 46-85 and 210-282. Specimens of some examination papers of the older type are also supplied. Some of the new tests, under the name of the American Council Beta French and Spanish Tests, have been published, and may be secured in quantity, with manuals of directions and norms, from the World Book Co., Yonkers, N.Y.

The monograph really consists of accounts of three surveys in which the new tests were employed : the first was an inquiry into modern language achievement in the Junior High schools of New York City, when 19,000 children were examined in French, and 6,500 in Spanish ; the second reports the attempt made to apply new-type tests side by side with old-type tests in French, Spanish, and German at the 1925 examinations of High School candidates conducted by the Board of Regents of the University of New York, when 20,716, 8,033, and 2,276 candidates respectively were examined in those languages ; the third survey was carried out in the Junior High schools of New York City in 1926, on which occasion 18,870 were tested in French and 3,940 in Spanish. A full analysis of the results of the different examinations is given, and a detailed comparison made of those obtained from the two types of tests.

The work is illustrated by fifty-two tables and fifty-two very clear and well-reproduced charts. The printing leaves nothing to be desired, and the book must be one of the cheapest published for many years. Nevertheless, the full verbal expositions given of each table and chart seem over-elaborated, while the fact that the report of each survey is largely self-explanatory inevitably leads to a good deal of repetition.

The old-type tests in modern languages used in New York were similar in character to those used in the various school-leaving examinations in this country. Furthermore, in the Regents Examination it was the practice to set separate papers for those pupils who had studied the subject tested for two, three, or four years, but in the experiment first tried in 1925 only one and a half (instead of the usual three) hours were assigned to the old-type examination, the other one and a half being devoted to the new-type test, and this was made the same for all year classes. With regard to the possibility of framing a test which would give a trustworthy indication of the standard of knowledge reached, for example, by students in French, who had studied that language for such varying periods, Professor Wood writes as follows : "At first thought it seems impossible that *one* ninety-minute examination could be adequate to measure the achievement of students in second, third, and fourth year modern language classes ; but the results of this experiment show not only that *one* examination can measure the whole range of achievement in high school modern language work, but that one examination can measure such achievement more accurately and more usefully than three old-type examinations measure it." This pronouncement is supported by a detailed account of the three investigations and of the results obtained by applying modern statistical methods to the numerous data. The whole inquiry involved prolonged and most laborious work, and the conclusions drawn seem to me to deserve the close attention of teachers and examiners.

Those who have not so far seen an account of these modern tests may like to read the author's description of them.

" The new-type tests in French, Spanish, and German are parallel in form, each consisting of three parts :

" Part I is a vocabulary test of 100 multiple-choice items. Each item consists of a foreign language word, followed by five English words which are numbered. The student selects the one of these five English words which most nearly corresponds in meaning to the foreign language word, and puts its number in parentheses at the right of the item." I add items 2 and 98 as illustrations of the tests of this part.

2.—Faire : 1, makeshift ; 2, affair ; 3, make ; 4, beautiful ; 5, fairly . . . ( ).

98.—Ardoise : 1, ardent ; 2, arduous ; 3, difficult ; 4, smooth ; 5, slate . . . ( ).

" Part II is a reading-comprehension test of 75 true-false items, carefully and experimentally graded in difficulty. Each item is a statement in the foreign language of an obvious truth or of an obvious fallacy . . . It is a test of ability to read the foreign language and not a test of special knowledge. The student indicates his understanding of the statements by putting a plus sign in the parentheses at the right of true statements, and zero at the right of false statements. The score is the number of correct responses diminished by the number of wrong responses." As illustrations, I give items 1 and 33 :

1.—Le dimanche est un jour de travail aux États-Unis mais le lundi on se repose . . . ( ).

33.—Une personne peut avoir l'air dur tout en étant très bonne . . . ( )

" Part III is a 100-item completion test of grammar, idioms, spelling, word-order, capitalization, accents, etc., and of active vocabulary. Each item consists of a short English sentence or phrase, followed by a foreign language translation in which one, two, or three words are missing. The student writes the word or words necessary to complete the translation on the dotted line at the right of the page." I add items 8 and 100.

8.—His sister and he are there. Sa sœur et lui (................) là.

100.—I was in a temper. J'étais (................) humeur.

(I may here add that a similar " objective " test in physics was set at the same Regents Examination.)

I need not describe the method adopted by the author and his collaborators in selecting the items to be included in the various tests : it will suffice to say that much use was made of such a book as Henmon's " The French Word Book," and of such a study as that reported in the author's " Comparative Study of the Vocabularies of Sixteen French Text-books." The answer given to each item was examined for the purpose not only of determining its accuracy, but also of ascertaining the value of the question, and on the same lines on which the individual tests are printed in this book, details are given of various findings. For example, the following particulars are entered concerning each item in the first section (Vocabulary) of Part I : " (1) Percentage of correct answers ; (2) Order of difficulty within the part ; (3) Order of difficulty in the whole test ; (4) Index of goodness ; (5) Order of goodness in the whole test ; (6) Henmon frequency ; (7) Wood frequency." The illustrative items which I have quoted above were found to be easiest and hardest within the part to which they belonged : No. 1 in Part I was ascertained to be No. 1 in order of difficulty (i.e., the easiest) in the whole examination (this comprised 275 items) ; No. 98 was No. 271 ; No. 1 in Part II was No. 2 ; No. 33 was No. 263 ; No. 8 in Part III was No. 16 ; and No. 100 was No. 275.

A striking conclusion that clearly emerged from the application of these tests to the Junior High schools of New York City and the High schools of New York State was that a considerable proportion of pupils were not in the classes for which their knowledge fitted them : for example, one-third of the students entered for the Regents examination in French were misplaced by one year or more. Professor Wood draws a still more dramatic conclusion from the examinations made in the Junior schools. " In reviewing the data of this survey," he says, " we cannot escape the suspicion that only a fraction of these 25,000 youngsters really belong in foreign language classes." This suspicion is strengthened by the discovery that out of 20,716 pupils who took the Regents Examination in French in 1925, 13,486 had studied the subject for two years, 6,741 for three, and only 489 for four years !

The impression made on me by the book is that the author has made out a strong case for the great usefulness of these New-Type Tests. In particular, they ought to prove of great value when applied in individual schools as a part of the ordinary testing procedure, not only in disclosing the pupils' knowledge, but also the extent to which places in the proper classes have been given to them : the tests will help to reduce the number of children who are either " marking time " or struggling with work for which they have no proper foundation. I am not, however, convinced that tests in composition should be omitted from School-Leaving Examinations. Professor Wood is well aware of the way in which the type of question set at those examinations reacts on the parts of a subject that will receive attention in the class-room (see his remarks on page 142). The dropping of a Composition Test would give rise to the idea that its value is less than is now generally supposed.

Nevertheless, it is open to grave doubt whether modern language teaching will prove as profitable as it ought so long as greater emphasis is placed in examinations on written tests than on proficiency in various kinds of oral work.

W.P.

Inspirational Teaching. A Record of Experimental Work in the Teaching of English : by George Machaness, M.A., Senior Lecturer in English at the Teachers' College, Sydney, N.S.W. (J. M. Dent and Sons, London and Toronto, 1928. Pp. 225+xii. 10s. 6d. net.)

"As ' under the sun there's nothing new,' " writes the author, " so original plots are hard to invent." Thus it is with original methods in the teaching of English. Mr. Machaness, however, proceeds to show how boys may nevertheless exhibit originality on old themes. Similarly he himself shows marked originality in his re-handling of the newer methods of teaching English literature and composition.

The book is based on lectures given at the Teachers' College, Sydney, but is mainly a record of the work done by the writer when he was English master at the Fort Street High School, Sydney. Mr. Machaness freely admits his debt to Mr. Caldwell Cook, the pioneer in active methods of teaching English, and to a number of writers on the teaching of English composition, and the references to other sources of information are as complete as could be desired ; but it is evident throughout that he has not merged his individuality in that of any one of them. The inspiration they have given him is equalled by the inspiration he is able to give his readers. To those who know too well how many successful methods have been immediately mechanized by the followers of their inventor, this is strong evidence of the soundness of the newer methods in the teaching of English. It is indeed hard to think of a truly suggestive book on method which has been written by a disciple of a particular school who did not belong to the original group.

Teachers in secondary schools will be attracted to this record of school work because it was achieved under normal conditions, with examinations as much to the fore as anywhere in Great Britain. Indeed, Fort Street had only three years in which to prepare for the First School Examination, whereas English schools commonly have four; and the two examinations seem to be taken at fifteen and seventeen, a year earlier than is usual here. The familiar argument that the Perse School enjoys exceptional freedom from examinations cannot be brought against its Australian offspring. Further, the book serves as an all-round text-book of English method: it is not confined to expounding novel devices, though it is commendably brief in its statements on those parts of the syllabus, such as analysis, which descend to us from the Raw Meat Age, but which teachers who are pre-occupied with examination needs will be glad to hear Mr. Machaness still regards as essential. Teachers, too, with the older ideas on discipline will be pleased to find that, though the organization of plays and other activities is carried on entirely by the boys, if one may judge from the essays quoted in the course of the book, the pupils are entirely unconscious of any change in discipline. Probably the author is one of those teachers who has never had consciously to analyse how he secures discipline. The only doubt which we can conceive the teacher in the Mother Country may feel is whether Australian boys have not a larger store of originality than the occupants of his own class-room. The Colonist is the product of auto-selection for enterprise, so this may be: on the other hand no one discovered their originality till the proper means were taken to bring it to light.

Mr. Caldwell Cook's general methods are adopted on lecturettes by members of the class, treatment of Shakespeare, play-making and play-acting, "magimaps" (as the writer calls Mr. Cook's "islonds") and 'magitales," and the treatment of ballads. But throughout there is individuality of treatment. It is particularly the way in which the boys are first inspired to venture on these uncharted seas that will appear to be the chief difficulty to any teacher who is anxious to try the active methods; and it is here that he will derive his chief help from this volume. The life-belt by which the boys learn to swim is always fully described, and when and how it is removed. Then there are quite a large number of additions to the methods, such as the device whereby each boy is asked to supply the first two lines of a story of adventure to be written by other members of the class, the division of the form into four "sides" which compete in rendering an act of a play, the "plot graph" of a play, the writing of extra scenes. The chapter on the essay is itself an essay, which one reads with a feeling of æsthetic satisfaction rarely derivable from a portion of a text-book on method. Similar feelings are aroused whenever the author, in showing how he treats some literary masterpiece to enable the class to try their hand at original work in the same branch of literature, himself becomes the literary critic. He possesses a wealth of sources for illustration. He is not afraid of using the material which the natural boy loves; but he has no fear of introducing him to the greatest. He makes plentiful use of contemporary writers, and he never uses disparaging comparisons; but they are not his first love.

Though there are many chapters which can be read for delight as well as for instruction, it is throughout a text-book of method, packed with suggestions as to topics for exercises of all kinds, various forms which exercises may assume, books from every class of literature which his experience suggests appeal to boys, sources from which to take class plays, places in which to find information, and methods of treating literary history, versification, the historical novel, and other topics too numerous to mention, all of which as well as the large number of examples of original work done by the pupils give the practical teacher a clear picture of the nature of the work and stamp an impression of individuality on the experiment. R.L.A.

An Approach to the Psychology of Religion : by J. Cyril Flower, M.A., Ph.D. (Kegan Paul. Pp. 248+xi. 10s. 6d. net.)

Dr. Cyril Flower has made a profound and penetrating contribution to the psychology of religion. The book is the product of an investigation that is never content with an arrest of analysis short of its possible ultimate. The result is a radical study. The thought is sincere and independent and never permits itself to be lost in picturesqueness or beauty of style. Students long weary of popular works on the psychology of religion, which show their finest skill in the evasion of the real problems and their subtlest tact in protecting their readers from the disturbing necessity of having to face fundamental issues, will be glad to come across a thesis like this which shirks nothing that comes within the scope of its inquiry and keeps to psychology proper without offering us gratuitous pronouncements on theology and philosophy.

The subject is discussed in the light thrown by the recent development of psychological theories upon religion. Within the limits set by the volume it strikes us as the freshest and most thorough-going work that has recently come under our notice. It will in no wise supplant general works like Pratt's " Religious Consciousness." Although it has two long illustrative chapters on the Winnebago Indians and George Fox, it has little in common with the discursive method of James' "Varieties." It may be said to deal not with the psychology of religion so much as with one point in the psychology of religion. But that point is the whole point, and until it is settled the more general treatises can be no more than general air-views of a baffling territory.

The book is described as an attempt to determine what " mechanisms " are involved in religion and the religious response. Its argument is that the experience of *frustration* in situations felt to present a " beyond " outside our personal control is the one common characteristic involved in every religion. This, however, is not the " numinous " consciousness as Otto presents it in connection with a postulated religious " instinct " or " a mental predisposition unique in kind." Indeed Otto's view, though it lends, in some respects, deep support to Dr. Flower's argument, comes in for some very shrewd and cogent criticism. Nor, of course, is this examination of the experience of frustration an elaborate psychological commentary on

" The devil was sick—the devil a monk would be
The devil was well—and devil a monk was he."

The central fact for religion, however, is that man finds himself in a situation which he is incompetent to cope with adequately on the lines of any existing mechanism of response. Religion is one—but only one, even if also the most important—of the attempts of man to overcome the poverty or impotence of his innate equipment in presence of beyondness and mystery. He feels confronted by the existence of more and other in his world than that to which he is, by his present endowment, able to adjust himself. His existing equipment is baffled, but only baffled, not eliminated, as in " collapse." The typical nuclear religious experience is thus a kind of aching helplessness. No mere conflict of instincts as such, within themselves, however important in giving shape and vehemence to the frustrative experience, could ever give rise to the fundamental experience of religion. Man achingly helpless before an utterly beyond, frustrated at the hands of a universe which is challenging him with signals, but signals to which he has no adequate mechanism to respond, must respond *somehow* or despair and collapse. " It is this fundamental fact—which itself cannot be explained at present by anything simpler—that lies behind all the mental conflicts, fantasies, day-dreams, imaginations, visions, dreams, rationalizations, arts, philosophies, and religions of man " (page 209).

This argument, which is supported by a full familiarity with the works of the behaviourists and of the analytical psychologists, is, of course, neither destructive nor constructive in itself but purely psychological. But perhaps the best piece of work in the volume is the chapter on " Psychopathology and Religion," where the author deals with Jung and more especially with Everett Dean Martin's theory in " The Mystery of Religion."

Religion will never find it possible to become a science or to substitute understanding for belief. The mystic said : " If I had a God whom I could understand, I would not hold him to be God." Dr. Flower says : " Religious belief which can be fully and adequately expressed in terms of scientific understanding ceases to be religious. We believe religiously precisely where we cannot understand." But let not either the dogmatist or the negative sceptic leap at this. " The problem of freeing man from the depressing results of submission to dogmatic belief is a very real one, but its solution does not involve the elimination of belief any more than the solution of the problem of a headache involves decapitation."

Again, the mere fact that religion is in many instances an escape, a flight from reality, a consolation, and " the opium of the people," is no reason for concluding that it came into existence just for that purpose. That is one of the most obstinate fallacies of some of our moderns. It is here aptly pointed out that men who in later years talk affectionately of their Alma Mater did not go to college to gratify the incest wish, and because a woman may find symbolic satisfaction in nursing in a children's hospital it does not follow that the hospital came into being in order to satisfy the thwarted affections and maternal instincts of young women.

J.M.L.T.

The Life of Rachel McMillan : by Margaret McMillan. Introduction by the Countess of Warwick. (J. M. Dent and Sons, Ltd., London and Toronto. Pp. xii+201. 6s. net.)

In many ways this is a remarkable book. It is at once the story of a noble woman's effort to save little children from the tragedy of slum life ; the record of an experiment that, unlike most experiments, absorbed the whole powers of the experimenter ; the revelation of a vision of education that would recognize no barrier or difficulty as final. It is the history of a dedication of talents, of culture, even of life, to a cause that to many was a stumbling block, to others foolishness, and to a few the liberation of personal powers in a new form of social service. And Miss Margaret McMillan's pages give not only a touching picture of her sister as an educational pioneer : they give us a vivid description of the social life of her time. The attitude and aims of the Socialist party ; contacts with slum workers, and with working girls' homes, with countesses and duchesses, with thinkers like William Morris and H. M. Hyndman ; anarchist schools and leaders like Louise Michel ; suffragist leaders ; rustics and cottagers and vicars in Kent ; factory hands in Bradford ; miners and potters and Sheffield cutlers ; noisy courts and sodden alleys in Deptford ; American millionaires in England ; Chicago and New York ; Zeppelin raids and the trying conditions of 1915 and 1916 in a danger-zone slum school—all are recorded.

Two qualities are characteristic of Miss McMillan's work : keen and vivid appreciation of the defects of present day teaching and clear perception of the aims which would reform education and regenerate society. One or two illustrations of each of these points must suffice.

Was there ever a more delightful description of the trials of the " untrained " teacher than that of Miss Margaret's first efforts with the class of jam girls at Whitechapel ? " I taught them singing, or rather I talked to them while they jeered at me . . . the girls, I am bound to say, led me a dreadful life. They ranged in age from fifteen to thirty or more : all of them came to the class after a long day's work in the factory . . . They were terrible lessons. Shouts, laughter, sudden questions and gravity, then cat-calls. My chair was a pitfall nearly always. Sometimes there were pins in it. Sometimes a leg was loose, and often it fell for no obvious reason. When we sang the rafters rang : or the girls would start two songs together, or put in street-song choruses. My hat was often missing when I wanted it. Squirts of water reached me and worse things, and my school was a Babel where everyone amused herself as she chose." Rose, the ringleader, was nothing if not frank : " Ye're losing yer chances, y'know, a-coming down here, ain't yer ? A-jawing to us same as the old women as gives us treats. Why ain't yer a young un yerself ? Lors a mussy, ain't yer got a chap ? " And what a vivid pen picture in a few lines of the elementary school of 1894 ! " It was in a poor but not a very poor neighbourhood, but what we saw there will perhaps never be seen again. Happily it could not be seen now when medical inspection and school clinics have become commonplaces of our life. Children in every stage of illness. Children with adenoids. Children with curvature. Children in every stage of neglect and dirt and suffering. We had just come from a world where the human body was almost worshipped and where, in particular, the vocal organs were all tuned and trained to give their best. And all the while millions of children who urgently needed help had none."

Plans for medical inspection, largely the result of Miss McMillan's pioneer work, took shape, and most of her demands were granted in 1907. A school clinic was opened in 1910. Camp schools and open-air nursery schools followed—all possible " because one valiant heart was patient and of good courage. It is pleasant to think perhaps, that things get done somehow without trouble or suffering : but there would be no truth in this record if I left that impression."

Like Dr. Montessori, Miss McMillan was greatly influenced by Séguin's work with defectives and early realized that slum children needed individual study and a specific type of education. " New environment, and a new study of *organic* subjects, involving the speech centres, the middle brain and the respiratory and circulatory systems—these must come first." Nurture and teaching and physical movement were all important, and all found a place. " She planned for our little ones a world where they would feel the beauty and changing life of the seasons. She knew long before the coming of the Sunshine League that there is healing in the light. The children would grow strong." And her faith was rewarded. " Our medical officer reports that 80 per cent. of all our little entrants are rickety at the age of two . . . The poor little things are cured very often in six weeks. A much larger number are perfectly well in six months, but in one year there is no case of rickets left in the whole school. There are only about seven per cent. who, after three years in the nursery, are unfit to attend indoor schools. The vast majority are made whole, and all this is done, not by new and wonderful methods and systems—it is done mainly, perhaps, by the sun and air . . . Gardens, big gardens, filled with hundreds of children, clean as rain, wholesome as the light that healed them—these should be everywhere . . . If England will make them general, if she will do this on a large scale, she will soon have a new race and may close a great many of her hospitals." And Rachel McMillan cherished the belief that the nursery school was the fittest rallying point for the divided classes of society. Before the child has been allowed to grow away from the well-cared for and the well-educated, he is a little creature who clings and laughs and makes his teacher care for him. " Children can unite all classes if all classes are allowed to serve them." It is in the nursery school that Miss McMillan finds the realization of an earlier writer's dream :

" The happy house where friend from friend divides not,
And what he loves, he hath for evermore."

W.J.M'C.

Psychology and the Soldier: by F. C. Bartlett, M.A. (Cambridge University Press. Pp. viii+223. 7s. 6d.)

The book is a selection from lectures delivered in connection with recent courses in military studies at Cambridge. In the Great War every belligerent nation called upon its psychologists for advice, but with peace this liaison was largely dissolved. Not so at Cambridge, where the importance of psychology in relation to military problems was fully realized. Thus the author closes his book: "Any country which undertakes this matter seriously and with judgment will be taking a great step towards rendering its offensive and defensive services efficient in directions which, while they are of supreme importance, have been frequently neglected."

Some of the most important of these directions form the titles of the three parts into which the book has been divided: (1) Choosing and training the recruit; (2) Leadership, discipline, and morale; (3) Mental disorders of warfare. The aim of the book is to provide the ordinary military officer with necessary and helpful knowledge so that greater efficiency in the individual and in the group would be secured. The officer would also take a livelier interest in his profession, for he would be provided with a hobby which is "at once a relief from regular duties and an enormous aid to their satisfactory performance." The book should also prove interesting to the general reader. Part I contains chapters on the testing of the special senses and abilities and the testing of intelligence. Light is also thrown on the training of bodily skill and one wonders if Light Blue oarsmen have not profited by this. But it is in Part II which deals with social psychology, the maintenance of discipline, the functions of leadership, and the development of morale, where the author has most scope for originality. Interesting is the attempt to divide leaders in a complex modern social organization into three classes: the institutional type, the dominant type, and the persuasive type. "The first maintain their position mainly by virtue of the established social prestige attaching to their office; the second by virtue of their personal capacity to impress and dominate their followers; the third by their personal capacity to express and persuade their followers." Probably most ordinary men would insist that a leader is essentially a person they can trust. They would, therefore, maintain that he must, at least, impress his followers. But Mr. Bartlett holds that "the institutional type of leader abounds . . . in an army in peace-time and in most sections of the modern Church, except when theological discussion becomes violent. Whenever antagonisms arise between group and group and become bitter to the point of fighting, the dominant leader has his best chance. Whenever there is much bargaining to be done between group and group and disagreement stimulates discussion, the persuasive leader plays his part."

Mr. Bartlett, however, admits that few leaders of society whom we actually meet will fit completely into his scheme. This is not surprising if we note that the basic elements emphasized in the respective groups are: (1) the office; (2) the leader; (3) the followers. Thus some great leaders possess all these attributes in high degree, and a good proportion of leaders, whether corps or company, county or club, may have two of these attributes fairly strongly developed. Such criticisms could obviously be made in the case of any grouping into types. The great leader probably defies analysis, and the author does not, of course, assume that anyone possessing one of these attributes would make a leader. For the crudely institutional leader would approximate to a robot. The crudely domineering would be rendered impotent in civil life by a phlegmatic "non possumus" or possibly a choleric "allez-vous en." And both in peace and in war this type of officer tends to disappear. Equally impotent is the crudely persuasive—the opportunist—who waits to see which way the cat will jump. On a higher plane in this group is the leader who lives laborious days attempting to impress his followers. As followers change he also is apt to be confused with the opportunist. It is also obvious that only a proportion of those holding official rank in a social organization can be designated leaders.

Although the author's scheme is entirely different in conception from Kretschmer's classification of leaders into cyclothymes and schizothymes, yet the " persuasive type " appears to correspond to the jolly organizers and understanding conciliators of the cyclothymic group ; but while idealists, despots, fanatics, and cold calculators appear in the schizothymic group, yet tough " whole hoggers " are cyclothymic. And there appears to be no provision for the " institutional type." But as the concepts cyclothymes and schizothymes themselves are highly complex and debatable, Mr. Bartlett's simpler scheme appears far more likely to prove empirically useful.

In Part III Mr. Bartlett indicates the course of a soldier's normal reactions to warfare and, without unduly encroaching on the province of the medical specialist, he concentrates on two of the great groups of mental troubles of war : conversion hysteria and anxiety neurosis. Opinions may differ as to the relative importance of prognostic signs of probable trouble : and the measures taken for alleviating or removing these troubles are many and various. All, however, would agree that the author has brilliantly fulfilled his aim in writing the book. Ll. W. J.

Mind and Body : A Criticism of Psycho-physical Parallelism : by Hans Driesch, D.Phil., translated by Theodore Besterman. (Methuen. Pp. viii + 163. 6s.)

Admirers of Dr. Driesch will welcome this translation of his " Leib und Seele " as throwing light from a new angle on such of his works as are already available in English. As an introduction to his thought it suffers from an excess of references to his own less accessible volumes and to those of less distinguished German contemporaries ; it is consequently full of compressions and assumptions which make it difficult to do full justice to his argument.

Dr. Driesch is well known as a protagonist of vitalism in biology, and part at least of his hostility to the traditional doctrine of psycho-physical parallelism is due to his belief that " its acceptance implies . . . the complete and exclusive validity in nature of the laws of physics and chemistry." He is not really battling on behalf of an alternative hypothesis such as that of interaction. Accept his vitalism on the side of nature, and he will provide a parallelism of his own between (1) direct conscious experience ; (2) the psychological factors which underlie this experience without rising into consciousness ; and (3) such aspects of the vital process which the " mechanist " physiology is unable to explain. This connection of his criticism with his general campaign against materialism will heighten public interest in his work ; but it hampers our appreciation of his specific arguments against the traditional theory : for, *mutatis mutandis*, some of them are applicable to his own parallelism as well.

This is a pity : for on the assumption of the older materialism these arguments are often cogent and decisive. He justly draws attention to the difficulty of constructing a mechanical correlate for a highly abstract idea such as $\sqrt{2}$; he finds in the distinct yet fallacious presentations of memory-images a conclusive argument against the theory of " brain-traces " ; he insists that the term " resultant," employed alike in psychology and in physical science, conceals a distinction between mechanical and organic combinations of elements. All these arguments bring to the fore the fundamental defect of psycho-physical parallelism in its older forms : the fact that it assumes, and can only be founded on, an atomistic view of mental events. Especially interesting is his analysis and synthesis of the compound elements of physical and mental events, and his conclusion that " the manifoldness of the physical " is only expressible in terms of spatial relations, whereas " the manifoldness of the mental " contains elements which are qualitatively distinct.

It may, however, be urged in this connection that infinite varieties of arrangement are physically possible, so that it is at least conceivable that every mental event should have a physical counterpart. To this Dr. Driesch replies that " the abundance of particular physical spatial relations . . . has in fact its detailed counterpart in the mental, and thus cannot be the physical counterpart for the manifoldness of the mental in general." In other words, the mental has its spatial foundation, but has its own characterizing qualities as well, which, though built upon the physical, are subject to their own laws of change, the physical being no more than their general condition. This is perhaps the most fruitful aspect of Dr. Driesch's treatment. Less fortunate is his attribution of " pure " time to the mental and " pure " space to the physical (unfortunately he does not deal in the spatio-temporal) ; and more than once this critic of parallelism follows parallelists from Spinoza downward in failing to distinguish between the relation between mind and its objects on the one hand and the relation between mind and states of the brain on the other : as when he urges that " physical spatiality is already correlated to the psychical experience of spatiality."

The constructive part of the work is hasty and abbreviated, and hardly satisfactory. Dr. Driesch's private parallelism can be countered by his own arguments : for why should the " manifoldness of the vital " any more than " the manifoldness of the physical " be adequate to the " manifoldness of the mental ? " In this section, too, his references to other works and his metaphysical interjections are most frequent and bewildering.

The total effect of the book is that of a great man's holiday from greatness. There are abundant indications of its author's constructive and penetrative genius : but in itself it is scattered and often perfunctory ; it is clogged by a pedantic proclamation of intentions ; and its unnecessary air of portentous discovery masks much of its real common sense.

Mr. Besterman's translation is thoroughly competent, though occasionally awkward. The double adverb, " analogically mediately," is hardly in keeping with the genius of the English language. " Parallelity," even in inverted commas, is inadmissible, and might have been circumvented by paraphrase. " Staticly " and " dynamicly " are eccentric forms for which there seems to be no justification but caprice. But, on the whole, the translator has performed a task of unusual difficulty with great credit, and his careful attention to the meaning outweighs his " literary lapses." A.B.G.

McClure of Mill Hill. A Memoir by his daughter, with an introduction by T. H. Darlow. Portraits and illustrations. (Hodder and Stoughton. 1927. Pp. 340.)

Sir John David McClure died on the 18th February, 1922, in the Head Master's House at Mill Hill, which he had occupied for over thirty years. During that time he had raised the school from what looked like an almost desperate position to a place among the greatest schools of England ; that in itself was a great and memorable achievement, but the story of it has been told elsewhere ; this book is the story of the man himself :—it is his character. Its interest lies not so much in the record of his activities, of his astonishing energy, or even of the quality of the service that he rendered to every cause that he supported, as in the attempt to make such a portrait of him as should satisfy those who loved and admired him, and to enable even a casual reader to understand something of that love and admiration. There can, I think, be no doubt that Mrs. Ousey has succeeded in that attempt ; I can think of no better thing to say about it than that her father would have liked it, and that, for all that it owes to many contributors, he would have liked his daughter's part in it the best. Those who knew him only in his later years will be especially grateful for the sketch of his early life, when his character, at once so versatile and so simple, was feeling its way through many difficulties to that serene maturity of judgment and outlook upon which men—and boys—of all sorts and conditions learnt to rely, and never relied in vain. And he was so amusing. The jesting of schoolmasters has but an indifferent name in the world : it is thought to come uneasily, except when used to temper—or to reinforce—pedagogic frightfulness : McClure's was so gaily spontaneous that, like Sydney Smith, whom he resembled in several ways, he is in danger of being remembered more for his wit than for his wisdom. One of the contributors of reminiscences to Mrs. Ousey's memoir writes of his powers of sarcasm ; I find it difficult to believe that he was ever sarcastic. Sarcasm is a kind of malicious mystification, to the use of which schoolmasters are often tempted, but which good schoolmasters do not use—or if they do, since even the best may yield to temptation, they heartily repent. Ironical he was : but irony, though a sharp weapon, is a clean one : the edge of sarcasm is poisoned. His speeches, whether prepared or not, were delightful to listen to. There is a kind of orator that seems to be deliberately produced in some parts of the United States, whose next remark follows so obviously from the one before that after hearing a few speeches one can imagine a quick-witted reporter keeping a sentence ahead all the way : McClure said, not the thing one expected him to say next, but the thing one wished one had had the wit to expect. It is said that his learning was not profound : that may be, but the last thing that could be said of him is that he was superficial. The passion for getting at the essential truth in an argument, noticeable in his Cambridge days, was one of the strongest elements in his character. For that very reason he was tolerant—too tolerant sometimes for his more ardent Nonconformist friends ; for the same reason, when he believed himself to have got hold of something essential, he was not to be budged. It was possible, though not easy, to differ from him : it was seldom possible to differ from him confidently. A striking example of this is given by Mrs. Ousey in relation to the discussions which led to the establishment of the Teachers Registration Council, which owes more to him than is perhaps generally understood. Sir Robert Morant—quite sincerely and for substantial reasons—did not believe that the registration of teachers would do what its advocates hoped it would. I am not sure that he was ever convinced that he was wrong ; but the letter quoted on page 173 of this memoir shows the profound effect that McClure's conviction produced upon him. There is, by the by, one mistake in the introduction to the memoir : Mr. Darlow states (page 14) that McClure succeeded Sir Michael Sadler as Chairman of the Teachers Registration Council. A good many people would have liked to see him in that position, but opinion concentrated upon the belief that the chair should be filled by someone from outside the ordinary membership of the Council ; in any case he could not have succeeded Sir Michael Sadler, who held office until 1922, and was succeeded, after Sir John McClure's death, by Lord Gorell.

This is not the place to attempt a review of McClure's work as a whole ; anyone who looks at the bare list of dates on pages 20 and 21 of the memoir will at least get some idea of its scope and variety : but one thing may be said. He got into the teaching profession almost by accident, but once in it he regarded himself as bound to let nothing stand in the way of the most complete devotion to every duty that it imposed upon him. To the practice of that " mere profession "—as it was recently called by an advocate in need of a cheapening epithet—he dedicated himself ; what he thought of it may be read in the quotation given on page 18 from his Presidential address to the Head Masters'

Association in 1914; it begins with these words: "The taunt has often been hurled at us that we teachers think far too much of ourselves. The real truth is the exact opposite. The fundamental danger of our life is that we shall not think enough of ourselves, shall not believe enough in the greatness, the dignity, the importance of the work we are privileged to do. We have blamed others for slighting our work when the fault was our own, because we never showed in what honour we held it or how sacred it was to us." If the teaching profession is, as he would have delighted to suggest, not quite so "mere" as it used to be, the debt which both teachers and taught owe him for that can scarcely be exaggerated. Even now it is difficult to think of him as not still among us; but, to adapt the words of another memoir, also due to filial piety, "*Quicquid ex eo amarimus, quicquid mirati sumus, manet mansurmuque est in animis hominum.*" R.F.C.

The Mental and Physical Welfare of the Child: by C. W. Kimmins, M.A., D.Sc. (Partridge, London, 1927. Pp. 255. 6s.)

The Health of the Child of School Age: by various authors, with a foreword by Sir Thomas Oliver. (Humphrey Milford. Oxford University Press, 1927. 6s.)

These two books are very similar in scope, though in one there is a limitation to school age and practically to physical welfare; are alike addressed particularly to parents and teachers; and both follow the same plan, that of separate contributions by eminent specialists. This has the advantage of getting the teaching of an expert in each department, the disadvantage of repetition of information more than once.

The importance of the early years of infancy and childhood, "the most crucial period of the child's life," is emphasized in Dr. Kimmins's volume. This book opens, unpromisingly enough, with a scrappy and ill-written chapter by Sir Bruce Bruce-Porter, who allows himself to speak of "Dame Nature," "the main street" (for the alimentary canal), "a square deal," and to use the expression "to function." He makes the sweeping statement that when a child is ill, however slightly, "*all* his psychological characteristics either disappear or are perverted." Dr. Arnold Gesell on "The Mental Hygiene" and Dr. Eric Pritchard on "The Health" of the Pre-School Child redeem the book by really valuable and thorough contributions. Dr. Pritchard deals mainly with diet and the care and training of the digestive systems, but adds some valuable pages on the circulatory and respiratory systems. "Environment and education, with very few exceptions," he insists, "make all these systems what they finally become." Dr. Gesell lays stress on the importance of the first year of infancy: "Feeding, sleeping, bladder control, bowel control" are "mental," because they are ways of living. Speaking of "The Parent-Child Relation," he says: "The simplest, but . . . almost the hardest rule to apply at times, is: 'learn to let the child alone.'" Of fear as instinctive and protective and of excessive or unreasonable fears, and of how a child may be trained "to fear aright" what he writes is most suggestive and helpful. Mr. Bishop Harman on "The Care of the Eyes" is sound and practical, and Mr. Murray Levick is both enthusiastic and cautious on the subject of light treatment, preventive and curative, in "Light and the Health of the Child." Coming to school age Dr. Friend and Mrs. Meredith Clements, M.D., deal with "The Health of the School Boy" and "The School Girl" respectively. The frequency and importance of sources of sepsis in the mouth and nose and the value of nasal drill are pointed out particularly by Dr. Friend. The remarks of Dr. Clements on the menstrual function deserve serious consideration: her advocacy of routine morning and evening temperature taking may not equally be approved. She writes carelessly and so at times obscures her meaning: " Genu valgum, genu valgus," in a list of malpositions, is wholly baffling. Dr. Auden gives an informative chapter on " The Local Authority and the Health of the Child," and Dr. M. J. Reaney, closing the volume with " The Training of Teachers in Health Subjects," claims that " every teacher must have some kind of biological grounding before he can profitably follow his training course," and that " hygiene " training requires, in training colleges and schools, much improvement in the time given to it and the scope of the subject. That students should attend children's hospitals and welfare centres is a debatable proposition.

The Oxford University Press volume presents ten lectures delivered under the auspices of the Institute of Hygiene. The eminence of the lecturers is unquestionable, and each chapter is of high value. The slightest is that of Mr. E. B. Turner on " The Value of Sport and Physical Exercises." There is too much of Nature here again, " a very wise old lady," " a great engineer," and we might have been spared the dreary Kipling doggerel with which he concludes. Dr. Risien Russell on " The Prevention of Nervous Affections in the Young " commands respect, and he goes thoroughly into the matter, dealing with natal damage, with pre-natal influences, among them syphilis, alcohol, the maternal state during pregnancy, consanguinity and intermarriage of neurotics, and with post-natal conditions and diseases, such as influenza, rheumatism, and rickets. He condemns the " laxity and undiscipline " of modern methods of " training " of the young, and he views " with horror the introduction of anything so abominable as psycho-analysis in the training of children." The evils prevalent in public schools are seriously considered by him: and he sounds a warning note in regard to Spiritualism and to the mode of life of many of the young girls of to-day. " Disorders of Digestion during School Life " are treated with equal wisdom by Dr. Soltau Fenwick, who is especially informative on the causation and varieties of indigestion and the meaning of symptoms. On " Diet in Schools " Dr. Lemprière writes from the fulness of experience and is eminently practical. He calls for more fresh fruit and vegetables, for stone-ground flour and a close review of the cooking and service conditions in schools. Of meat at the tea meal he tells us that lapse of time has proved, to him at least, that the belief he once held that this was harmful to a boy's morals and aroused the animal passions is a complete myth. Dr. Scott Stevenson writes well and fully on "Affections of the Nose, Throat, and Ear." He tells us that he is " disinclined to enucleate the tonsils of children under the age of five unless there are very definite symptoms which call for their removal," but that adenoids " should always be removed when they are found to be present, even if the child is only a week old." His remarks on hereditary deafness and intermarriage are of interest. Sir Harry Baldwin writes of " The Dental Problem " carefully and usefully, and again shows the prime importance of feeding in the prevention of caries. But does he want us to bring up our children on home-brewed beer ? " The Incidence of Infectious Diseases in Public Schools" is reviewed in the light of statistics by Dr. C. E. Shelly, who calls attention to " that most efficient germicidal combination, Sunshine and Fresh Air." He also advises the exposure of healthy children at the age of about eight years to the infection of measles, so that they may get the benefit of its self-protection. Lieut.-Col. Elliot on " Eye Troubles," Dr. H. W. Barber on " Disorders of the Skin," and Col. A. H. Tubby on " Preventable Deformities " are all more than adequate.

These are two excellent books. The first is the more popular, the second will appeal to teachers, especially " Heads " and House Masters and to Medical Officers of schools. In both the boy, and girl, at a " public school " are mainly considered: and this means only a section of the children of school age.

W.R.J.

The Child and Society: by Phyllis Blanchard. (Longmans, Green, and Co., Ltd. Pp. 357. 10s. 6d. net.)

This is a most interesting book to the English reader; less, perhaps, for its main thesis than for the picture which it presents, incidentally, of contemporary America's educational problem. It shows a community in which the pace of life is constantly being speeded up, while, at the same time, family solidarity is almost universally breaking down. In consequence, the strain of adaptation to the new conditions is falling increasingly on the young. "More than half the children now growing up show behaviour patterns which indicate that socialization has failed at certain stages of their development" (p. 268). Hence, there is being built up all over America an immense remedial and preventive organization centring round the Child Guidance Clinics, now treating their 75,000 cases annually, and likely to develop much further in scope. To one of these the author of the book is psychologist.

The main thesis of the book is consistently behaviourist and determinist in its standpoint. Children are not vicious; only maladjusted. Delinquency is a matter of "socially undesirable behaviour patterns;" or, alternatively, of "ill-adapted habits of emotional response." The root impulses to activity are the three innate tendencies to fear, love, and rage, and the complexity of human motives is accounted for by the variously combined and conditioned responses to which these three give rise. Even the so-called gregarious and parental instincts may be "entirely acquired through the action of social customs and institutions upon the individual" (p. 30). Everything depends, therefore, on the right conditioning of these three original responses. Intellectual development is relatively unimportant (the doctrine that virtue is, in any sense, knowledge must be anathema to this school of thought). This is fortunate, for while intellectual ability is relatively fixed, emotional responses on the other hand can be indefinitely transformed and modified. Since the training of the emotions and the inculcation of habits takes place most easily in early life, the pre-school years are all important; if the problem of these is solved, the problem of adolescence will take care of itself.

From general theory the author passes to an examination of the forces which, in present-day America, are, or may be, concerned in this work of "socialization." The family is, or should be, all important. But it has, in fact, defaulted. If it is ever to regain its influence there must be a deliberate attempt made to educate the rising generation, while still young, for parentage. The author looks forward to the time "when boys and girls will be taught these vital principles (of child psychology and sociology) in their school-days in a concrete fashion, by practice periods in a nursery school for their little brothers and sisters" (p. 308). The school as a socializing force is relatively negligible; partly because it concerns itself mainly with intellectual training; partly because its influence is exerted far too late. But it may help in the adjustment process by instituting a threefold parallel curriculum for all age-grades with additional classes for subnormal children and gifted children respectively. Other factors—the Sunday school; the cinema; reading; the attitude of the generations to each other—are in their turn considered and suggestions are made for hastening the time when "less of the nation's vitality will be drained off in the struggle between old and young."

To students of education the book is valuable for the scientific attitude which it inculcates. There are no choses jugées—unless it be the behaviourist standpoint itself! Interesting accounts are given of recent experiments and research which should serve to stimulate further observation and investigation. There is a useful list of topics for discussion in connection with each chapter, and a bibliography. One feels on reading the latter how small has been England's influence, relatively, to that of France and Germany, on the educational outlook of contemporary America. M.P.

Development and Purpose : An Essay towards a Theory of Evolution : by L. T. Hobhouse, D.Lit., LL.D., F.B.A., Martin White Professor of Sociology in the University of London. New Edition. Revised and in part re-written. (Macmillan and Co., London, 1927. Pp. xxxix+494. 15s.)

What is the place of mind in the universe and how is it related to the material world ? What is the significance of evolutionary process ? Have we any reason for supposing that there is any definite direction in which things are tending ? Conscious purpose in man seems to be capable of moulding the environment in various ways, with more or less success. Can we regard man's struggles as characteristic of something wider than man ? Can we look forward hopefully to a time when conscious purpose shall dominate more fully the world of matter ? Such are some of the main problems Professor Hobhouse set himself to deal with in this book when it originally appeared in 1913. He held that it was necessary for philosophy to go hand in hand with science, supplementing the investigation of fact by an examination of fundamental principles. Accordingly, his book fell into two parts, the first mainly dealing with the facts of the evolution of mind in the individual and in society, the second considering the whole situation in the light of general principles of a philosophical nature.

His general conclusion, put forward as a working hypothesis, was that " the evolutionary process can be best understood as the effect of a purpose slowly working itself out under limiting conditions which it brings successively under control ; " conditions which " at first dominate its life and thwart its efforts."

In the second edition Professor Hobhouse has not found it necessary to make any radical revision of his factual analysis, but he has largely re-written Part II in the light especially of the apparent challenge given by the world events since 1914 to his thesis that humanity is capable of rational self-direction. He has found reason, after careful analysis, to reaffirm his thesis ; but he has developed and strengthened his statement of it in many ways. The result has been enormously to increase the value of the book. No better treatment of the whole problem of development and purpose, in its wider issues, is to be found. Professor Hobhouse is distinguished alike by his breadth of view and his patient analysis of fact. No one has better succeeded in combining the scientific temper of caution and the philosophic appreciation of principles. The reader will not find a neatly parcelled out and rounded off system ; he will be confronted with no startling paradoxes ; but he will find himself led to the consideration of detailed facts in the light of ultimate issues which is at the very heart of a sane philosophy. L.J.R.

The Control of the Mind : by Robert H. Thouless, M.A., Ph.D. (Hodder and Stoughton, London. Pp. 211. 5s. net.)

This is a readable little book " for the ordinary man." A brief review of " Some systems of mental development with their aims " leads to acceptance of *mental efficiency* " as a reasonable ideal for our mental development "—its possible competitor, happiness, being " a quarry too elusive to be captured by direct pursuit " (p. 21). Consideration of habits, emotions, and instincts, the part they play in mental life and ways and means of controlling and using them follows. Auto-suggestion is dealt with, but while its value with " those processes which are automatic " is clearly stated, its dangers are stressed. Willed control is a more valuable tool with which to fashion the efficient mind. Concentration of attention is essential for building up the knowledge without which we must remain inefficient. It may arise spontaneously from interest, but often can only be secured by deliberate, willed effort. Concentration means restriction of the field of awareness and in many workaday situations this is a disadvantage. There must also be the ability to distribute attention over a wide field. Further, concentration is fatiguing and involves adequate rest for full efficiency. " The really efficient mind is the mind that can not only concentrate, but can also distribute attention for tasks demanding distributed attention and can relax efficiently when its tasks are over " (p. 118). From relaxation and rest we pass to sleep. " Overwork . . . means habitually working more than your night's rest enables you to recover from " (p. 132). With sleep come dreams—the kind that help us to sleep on—and we are led to think of dreaming in general—its value and dangers. Our willed actions first exist in imagination—are dreams, but we are prone to live in dreamland and " to forget how little dreams can do unless they are translated into actions " (p. 174). " Inferiority and Domination " are then considered. It is possible to overcome a feeling of inferiority, but the dangers of *over-compensation* must be remembered. " If the practice of a self-confident voice and the use of auto-suggestion merely change him from a shy and diffident man into an arrogant and self-assertive one not much will have been gained " (p. 185). The recommendation that salesmen and others should copy the methods used in hypnotism is severely criticized. " The circumstances in which these hypnotic tricks are justifiable are very rare indeed. . , . The individual who uses them for selling a patent medicine or a metal polish should be locked up " (p. 189.)

Lastly, the author points out that most systems of mental development are " parts of the practice of religious systems " and shows how much " the religious attitude of mind " adds value to mental efficiency. " If there is an Eternal purpose which we can help or hinder by our actions, then it becomes of infinite importance how effective our action is. Mental efficiency becomes a religious duty " (p. 210).

We are doubtful of the validity of the behaviourist creed and the James-Lange theory of the emotions that seem at times to be the foundation of the argument, feel that occasionally the author speaks as emotional political partisan rather than as reasoning practical psychologist and question the soundness of the advice to " think calmly and act emotionally " (p. 77). A questioning attitude was, in fact, fully aroused by the chapter on " The emotions and how they may be controlled," but this only added to the pleasure with which we read the book. R.J.B.

The Stream of Life : by Julian S. Huxley. (Watts. Pp. 56. 1s.)

The writer of " popular " science is not in general well-esteemed among the elect, and his ill-repute has indeed been often only too well merited. Instead of the imparting in easily apprehended form of the findings of current science we have too often a mere vulgarization of half-truths and one-sidedly presented theories ; and the popularizer then becomes merely a caterer for a public taste that is as ready to swallow sophistry as truth. And yet it was never more important that there should be honest and gifted writers ready to do their best to keep the ordinary not unintelligent man abreast of—or rather, not too grotesquely behind—the main march of knowledge. It is fortunate that we have many such writers who are not amateurs with just enough acquaintance with science to make their presentation of it obscure and untrustworthy, but themselves original researchers. For in this sphere, if not in that of economics, the producer makes the best purveyor—if he has the requisite skill to " get it across."

Professor Huxley, himself an original researcher in biology, has this skill in generous measure. In this little book of fifty-six small pages he has republished a series of excellent wireless talks on some of the questions occupying biology to-day, and the contemporary outlook of the biologist. He deals with "The Continuity of Life," "Heredity," "Development," "Evolution," "Nature and Nurture," "The Evolution of Man," and "The Hope of Betterment." The account is so clear and lucid that the reader is in danger of misprizing the adequacy with which, within the limits of so brief a survey, the author selects his facts and illustrations and states his findings. The two or three pages on natural selection would serve to arm any candid reader against many much more pretentious pieces of argumentation on this controversial subject, and in his concluding talk Mr. Huxley puts very fairly the case for a sane and humane eugenics. On both these matters we would commend the booklet to all who are in danger of being swept off their feet by the perfervid diatribes of a Mr. G. K. Chesterton.

Mr. Huxley in his preface expresses his sense of indebtedness to the B.B.C. for organizing the various series of talks by scientists. The reader who was not fortunate enough to hear them will join in this expression of thanks when he reads this particular series in its written form. J.W.H.

Essays on Education: by H. E. Haig Brown. (J. M. Dent and Sons, London and Toronto; E. P. Dutton and Co., New York. 1928. 2s. 6d. net.)

This little volume reminds one of Edward Thring's writings. A generation is coming into being which acquires psychological ideas and a philosophy of education first and interprets its experience against this background. Here we have the position reversed: the writer is interpreting newer ideas and formulæ against a background of practical experience. And the essays, we suspect, are written for such of the generation now in its maturity—parents and teachers—as have not interpreted newer ideas and have been unable to reconcile them to the experience of their own school days—those who, in the author's words, always begin, "When I was a boy, by Jove, sir," or "My dear, when I was a girl, girls NEVER, etc., etc." The draught is made attractively palatable. No such recipient would suspect any psychology or any educational theory; but it is there all the time. Gently mellowed in the sunshine of an urbane personality and softened by charm of language and width of background, these principles are then presented with the spices of parable and simile, till the acidity of the raw fruit is indistinguishable to the taste.

The essays attempt to present only the architectural features of education, not detailed instruction for the masons. Curriculum is treated in the form of a Socratic dialogue, methods by a parable from vitamins, and discipline in a charming essay. *Idola* are treated gently, *idola* of the public school, of the business parent, of the American tester with his eye on efficiency. The result is to give a sense of proportion. In one sentence only is the writer's faith in the public school system expressed: "In getting to know others, a boy seems to gain something which is not unserviceable to himself—a kind of justice in discrimination, a capacity to discern what is due to other men and to reconcile what is due to them with what is due to himself." R.L.A.

Errors in School: by Sir John Adams. (University of London Press. Pp. 325. 6s. net.)

In this book Sir John Adams presents us with an anatomy of school errors; their nature, causes, varieties, and treatment are all expounded. As one would expect, Sir John writes in an entertaining and often amusing manner; and the collector of howlers will here find specimens to add to his store (e.g., the boy who gave as an example of a collective noun "a vacuum cleaner").

Further, the author, in his shrewd way, forestalls the obvious criticism that an undue attention to error is the wrong attitude—that it will increase the pedantry, the excessive zeal for accuracy, for which the teacher is proverbial. His point of view, says Sir John, should be professional : his " interest must be in the error and its cause, rather than in its æsthetic charm." In other words, the error is often a symptom ; and the teacher's job is to remove not merely the symptom, but its origin. Hence the author advocates " self-restraint in allowing errors a free run for a while "—until the right moment arrives for their correction. The young teacher will find invaluable advice on the treatment of errors in writing (those in dictation are taken as an example) and in class.

It may be added that certain new words (or new usages) are suggested. Sir John Adams has already succeeded in re-introducing " educand " into the language ; but " ptaismometry " is (one hopes) less likely to survive. On the other hand, there is much to be said for the proposal to restrict " idea " to the passive sense (presented content), and " concept " to the active aspect (presentative activity). At any rate, the distinction in terms will help the beginner to keep the two aspects clear in his mind. F.A.C.

Thought and the Brain : by Henri Pieron. Translated by C. K. Ogden. (International Library of Psychology : Kegan Paul. Pp. 262. 12s. 6d. net.)

This book, by the distinguished editor of *L'Année Psychologique*, may be welcomed as a study of the inter-connections and relations of psychology and physiology, even if one cannot subscribe to many of the ideas promulgated. That the study of the mind may be approached both from the point of view of physiology and of psychology we may fully admit : as that light can be thrown upon some mysteries of mental process by reference to physiological processes. This book dwells upon the physiological aspect without implying an ultimate materialistic causation, and, indeed, without attempting to wander into the sphere of metaphysics.

One lengthy chapter deals with the complicated facts of the localization of brain functions, and a considerable section treats of aphasia and the mechanism of language, while the last section of the book deals with the fascinating problem of the " affective regulation of mental life."

Professor Pieron threads his way persistently through a maze of physiological, anatomical, and pathological facts with great clearness. There is, however, an occasional dogmatism or slackness of expression of psychological ideas, which is unconvincing in the light of careful criticism ; as, for example, the assertion that the " elementary sensory image does not differ from the sensation, save in the manner in which it is provoked and in intensity," and that the elements of perception are " nothing but sensations."

C.W.V.

The Social Good : by E. J. Urwick, Professor of Political Science in the University of Toronto. (Methuen and Co., Ltd. Pp. 246. 10s. net.)

In this book Professor Urwick develops more fully the theory of spiritual individualism which he had put forward in his " Philosophy of Social Progress." In the first chapter he maintains that the true social good means the happiness of the members of society and that true happiness is a harmony of conscious purposes. In Chapter II he discusses the essential conditions of happiness : Work, strong interests, reciprocity of services, an ideal to live for, and immunity from severe hindrances. In Chapter III MacDougall's conception of Group Mind is attacked ; and in the next two chapters civilization and progress and the progress of the individual are considered.

The second part of the book is concerned with an examination of attempts to realize the social condition of the good. Methods of reform are classified; political, economical, and social organizations are critically considered. The chapter on reform by education contains some trenchant criticisms on educational aims and methods. In his chapter on the problem of the unfit he maintains that the greatest difficulty is the voluntary decay of the fit. The concluding chapter emphasizes the author's view that the essential elements of society are individuals, and God.

The book springs from a mind keenly alive to the importance of the issues discussed. Though fundamental problems are discussed throughout the book is not heavy. It is one which no student of social problems can ignore.

A.E.C.

The Problem of Vocational Guidance: by G. E. Myers. (Macmillan and Co., New York. Pp. 311. 7s.)

Books on problems concerning the right choice of a career for young people after they have left school are particularly interesting at the present time in view of the recent report issued in the form of a Blue Book by the Departmental Committee presided over by Mr. Malcolm.

The "Problem of Vocational Guidance," by George Myers, is, however, less useful for English readers than it might otherwise have been, because so much of the phraseology is that which is no doubt used throughout American education. Phrases such as "load of placement work," "individual counselors," "placement in relation to counseling," and the like, are not those which are used in England in connection with choice of employment problems. The author touches upon the contribution made by elementary education to vocational guidance, and proceeds to give the result of certain experiences in researches into the possibilities of vocational guidance and placing. If this book is to be taken as a fair indication it would appear that scientific vocational guidance in America has not progressed to the same extent as in this country, for considerable dependence seems to be given to a "try out" system rather than to the practicability of testing young people for aptitudes. At the same time the book is of value, for it is an endeavour to place before the public the necessity for regarding vocational guidance as an integral part of the State educational system.

M.S.M.

The Psychology of Youth: by Edgar James Swift. (Scribner's Sons. Pp. xi+342. 10s. 6d. net.)

The second edition now presented is a useful addition to "citizens made and re-made," "The Classroom Republic," descriptions of the Little Commonwealth, and the like. Dealing with the problems in discipline set by youth shortly after the age of ten, the author quotes from numerous classified "human documents" and draws conclusions highly favourable to self-government in schools. The value of open spaces for games, of gymnasiums, boys' clubs, etc., is discussed; then there are suggestive passages on the importance of creating community interest in the school so that it may be a social centre in a real sense. Several fallacies in existing opinions concerning moral training are brought to light, and some of the ways in which the educator may turn the gang spirit to social usefulness are set forth.

At times one may be disposed to deprecate a literal application of the illustrations. Would it do to allow every restive boy in a reformatory to "bum his way" to any place he liked on condition he returned in a week's time, or to give zealous pupils a free hand to bring unwilling mates to school by physical force? Nevertheless, regarding the illustrations as mines from which to abstract principles of treatment for very difficult cases of adolescence, the "Psychology of Youth," with its wealth of suggestions, will amply repay careful reading.

A.P.B.

Our Knowledge of the External World as a Field for Scientific Method in Philosophy: by Bertrand Russell, F.R.S. (George Allen and Unwin, London. First published 1914. Revised and re-set, 1926. Pp. 251. 7s. 6d.)

This is in many ways Mr. Russell's most interesting book, containing, as it does, his general review of the nature and method of philosophy. It is re-issued with a few modifications, so that it apparently represents what Mr. Russell would at present approve. It is remarkable how little he has had to modify. A few references to the progress of physics concerning space and time, a note that he has changed his views on a point in regard to sensation—that is all. The subject of the book is not the question: What do we know of the external world? but, What are the logical methods by which we may hope to reach knowledge of the external world? It can be looked on as Mr. Russell's "Discourse on Method," and thus as giving the logical base from which he set out in his exploration of the mind (in his "Analysis of Mind"), and of matter (in his "Analysis of Matter"), before bringing his investigations to a synthesis in his "Outline of Philosophy." One or two of the chapters make somewhat stiff reading for anyone not acquainted with mathematical procedure; but the whole book is so important and suggestive that it should be tackled by everyone who desires to be clear about modern points of view on these subjects. L.J.R.

How we Behave: An Introduction to Psychology: by A. E. Heath. (Longmans, Green, and Co., Ltd. Pp. 90. Cloth, 2s.; Paper, 1s.)

The Workers' Educational Association has taken the bold step of issuing a series of inexpensive introductions to subjects studied by adult students in their classes. The Association has fortunately obtained the services of the Professor of Philosophy in University College, Swansea, to write this Introduction to Psychology as one of that series of introductory outlines.

He is exceptionally well qualified to undertake this task and strikes the right note in his preface with the words: "My task is to set my readers on the way of thinking of these problems of behaviour for themselves." In this he succeeds, for in his five chapters he is always setting the student to think for himself. At least some of those for whom the book is intended have found that Professor Heath has not given them quite enough on which to base their thinking.

Chapters IV and V on the Development of Human Behaviour are good examples of condensed writing, but are, on the whole, the most satisfying, and at the same time the most stimulating, sections of an interesting little volume. Many students in training will appreciate this introduction to psychology and will thank Professor Heath for having made "real" a subject which is not always such to the young experimenter in teaching.

The Psychology of Abnormal People: by John J. B. Morgan, Ph.D. (Longmans, Green and Co., Ltd. Pp. 627+vi. 16s. 6d. net.)

This is a book of a type which is often under-estimated because of the form and plan on which it is written. It is emphatically of the text-book type, its chapters cut into numerous sections with their own headings, with summaries in large type, lists of important technical words and their meanings at the end of each chapter, and "projects for further study"; and these things, with the briefness of many paragraphs on important topics, give the impression of superficiality. Yet there are good uses for a book of this kind, and Dr. Morgan, even if he touches only briefly on many important and difficult problems, does so with clearness and good sense and in due proportion.

Thus the book becomes a very comprehensive guide to almost every aspect and every degree of mental "abnormality," making a useful compendium to guide the student of general or educational psychology in his reading, and to help the young lecturer in the subject to ensure that he is not neglecting some important aspect. The book deals with disorders of sensation and perception as well as with those with less obvious physiological connections such as abnormalities of memory and emotions, personality and suggestion.

C.W.V.

Psychology of Elementary School Subjects : by Homer B. Reed. (Ginn and Co. Pp. 481. 8s. 6d. net.)

This is a useful summary of recent psychological investigations into the problems which arise in the teaching of reading, arithmetic, handwriting, spelling, language, history, and geography, and continues the work done by Professor Freeman and by Professor Starch. It contains an enormous amount of material, bringing together the work of many investigators, and each chapter ends with a summary and a useful bibliography. The author is mainly concerned with American literature, though he has not entirely ignored English contributors, and he shows restraint and caution in the handling of material which often presents different conclusions. The book is valuable both to the " practical " teacher who is impatient of mere theorizing and to the student who seeks guidance to the literature of investigations into school problems. The six chapters on reading ought to be read by that army of teachers in our schools who have, by long familiarity and consequent contempt, reduced the subject to monotonous routine which conceals no problems and contains no adventures.

The Discovery of Intelligence : by Joseph K. Hart. (London : Geo. Allen and Unwin, Ltd. Pp. 431+xvi. 10s. net.)

The author of this interesting book wrote, in 1918, " Democracy in Education : A Social Interpretation of the History of Education." In the book under review he has given in condensed and somewhat popular form the essentials of the earlier work. He has worked out, as his main thesis, the view that history is essentially concerned with the conflict between " habits and customs " and " intelligence."

The book, which is extremely well produced and copiously illustrated, will be read with interest and pleasure by many students of the History of Education, especially by those whose interests are in the wider implications of that study.

The Measurement of Mental Capacities : by Cyril Burt. (Henderson Trust Lecture, No. VII. Oliver and Boyd. Pp. 52. 6d.)

This lecture is one of a series founded in 1829 for the furtherance of the aims and objects of phrenological science. Dr. Burt gives it the sub-title, " A Review of the Psychology of Individual Differences." It constitutes an admirable survey, in brief compass, of the methods and main results of the application of measurement or " assessment " to mental traits—both intellectual and temperamental, whether inborn or acquired, and general or special. It is written with Dr. Burt's usual clarity of expression and felicity of illustration, and would form an excellent introduction either for a student or " general reader " to the subject named in the title. C.W.V.

Education in Australia : edited by G. S. Browne. (Macmillan and Co. Pp. xxi+461. 21s. net.)

As this book is a comparative study of the educational systems of the Australian States it consists of a very full account of what is done in each of the States contributed by persons well qualified to give it. Each section begins with a historical sketch and then goes on to the description of the school machinery and administrative details, supply of teachers, university activities, etc. A final chapter summarizes statistics. The book is well " got up " with many photographic illustrations, maps, and diagrams, and is a source book for the student of comparative education.

The Quality of the Educational Process in the United States and in Europe : by W. S. Leansed. (Bulletin No. 20. The Carnegie Foundation for the Advancement of Teaching. Pp. x+133.)

A survey of educational objectives and organizations in Germany, England, and France not only as affecting schools but in application to university work and the preparation of intellectual workers, and then a very comprehensive account of the quality of intellectual education in the States. The whole is treated critically with some insight into the psychology of the peoples concerned. A useful monograph for the student of comparative educational administration.

Psychology by Experiment : by L. W. and F. L. Kline. (Ginn and Co. Pp. xii+335. 8s. 6d.)

This is a text-book for the psychological laboratory, giving instructions for the carrying out of experiments arranged in such general groups as Movement, Sensation, Attitude, Retention and Association, Perception, etc. The book is suitable rather as an instructor's manual than for the regular use of the student, some of the examples of results of experiments being given in a somewhat mechanical way and in too close conjunction with the instructions for the experiments and unrelated to any general psychological principles.

The Life-Force in the Plant World : by Eleanor Hughes-Gibb, F.L.S. (Routledge and Sons. Pp. xx+185. 5s.)

The problem of tracking the mysterious driving force behind vital phenomena is one which has exercised a fascination over the minds of many biologists and philosophers, and will presumably continue to do so. In spite, however, of Bergson's " élan vital," the " entelechies " of Driesch, and the like, we remain as much in the dark as ever as to the nature of this elusive force. What we can study with some degree of success is its physical manifestations in plant and animal. These two ideas appear to be somewhat confused in the mind of the author of the book under consideration. On the wrapper we read " What precisely this life-force is and what its aims are, the author attempts to elucidate in sections which throw much light on numerous problems of life generally on this planet, and human life in particular." I must admit that after a careful perusal of the book I found myself far from enlightenment on these deep mysteries. In the foreword the author explains that the aim of the work is " to provide a thread which may serve as a guide, to suggest lines of thought, to incite interest, to lead on till a whole group of ideas are gathered together into a harmonious whole." The thread chosen is " The Life Force at work in the plant-world." This " Life Force " is studied as it manifests itself in spirality and rhythm ; adaptability as illustrated by parasitism, saprophytism, symbiosis, and the habits of insectivorous plants ; reproduction ; motility and response.

On each of these subjects the author has interesting things to impart, and generally, the manner of telling is not without attractiveness. The book is marred throughout, however, by the author's persistent tendency to personify this " Life Force," as well as to attribute to it by implication, forethought and reason. The following are typical examples : " Obedience to the command of the Life-Force " ; " blessed and rewarded by the Life-Force " ; " led by the Life-Force " ; " how the Life-Force regards the association " ; " work entrusted by the Life-Force to lichens " ; " children of the Life-Force " ; " The Life-Force must have wanted them for the special work," etc. Such expressions are highly misleading and inaccurate, and correspond to nothing known to science. There is also a tendency to attribute conscious choice on that part of the plant, and more than a suggestion of personality and even morality. Carnivorous plants are judged to have made a " false choice " (yet it may be that this " choice " saved them from extinction); a certain leguminous plant is said to be " miserable " without its usual guests (bacteria). Expressions such as " loving copartnership " (of alga and fungus in a lichen), " the guilt of the fungi," are of doubtful value, even if employed merely in a metaphorical sense. As further examples, the Compositæ are said to be " hard-working, honest, and frugal plants, living faithfully and contentedly in varied and often poor surroundings " ; a pollen grain is actually referred to as " he " and the masculine pronoun is also used of a zoospore ! A plant is said to consider a certain food as indigestible ; we read too of " expectant ovules," of the " joyous swimming of the antherozoid to seek his partner."

With regard to the matter chosen to illustrate the mode of working of the Life-Force, the chapters on spirality and rhythm suggest that the spiral form has a deep significance in plant and animal world. This is doubtless true, although in the present state of knowledge, conclusions should be drawn with great care, and it is perhaps dangerous to press the idea too closely.

It is to be regretted that to illustrate the principle of adaptability the author draws examples only from plants which have adopted special ways of obtaining food and these are in the nature of exceptions. A great variety of examples could have been taken from the more common ways of plant life without weakening the impression.

Reproduction is dealt with on the whole in an interesting manner, though the descriptions are at times fanciful. An illustration showing the reproduction of Spirogyra might have been substituted for a rather unnecessary one of a common daisy.

The chapters on motility and response include an account of some of the experiments of Sir J. C. Bose, which are not altogether appropriate in a work of this kind, as many of the conclusions are not yet sufficiently well-established.

Other defects are the occasional introduction of a technical term without explanation (for example, though the pistil is referred to as a nursery, the term " apogamy " is used as if it were a common word) ; the misleading use of the word " personal " where " individual " is meant ; the obscurity in expression of some of the ideas in the Preface ; certain loose statements ; the suggestion that spores and seeds are interchangeable terms. An irritating habit of the author is too frequent a use of the exclamation mark where a full stop would be more appropriate.

The conclusion of the book is somewhat fanciful, and one can scarcely resist the impression that the author is a trifle obsessed with the fir-cone, her " Swastika," as she calls it. Certainly it is made to sustain a tolerably heavy weight of theory. E.M.P.

Art in Schools : by J. Littlejohns, R.B.A., A.R.B.C. With an introduction and additional notes by R. R. Tomlinson, R.B.A., A.R.C.A. (University of London Press, Ltd. 1928. Plates 25. Pp.152. 10s. 6d. net.)

This is just the book that students are asking for, so now they have got it I hope they will read it. It is addressed primarily to teachers in elementary schools, for which schools, however, the author presses the need for specialist teachers of art ; but the book contains matter that will be interesting to all teachers of the subject.

The introductory chapters show the necessity for understanding the child's natural development and for following it, rather than leading it, through its successive stages The author has studied the writings of Stanley Hall and Cyril Burt, and is able to connect his theories of art teaching with general principles of education. The broad conception of modern art teaching is then outlined and contrasted with the very limited one which it has supplanted.

While a number of the illustrations (mostly reproduced from children's drawings) are interesting, none are startling, and the student will not feel that an impassable gulf separates the possible results of his own teaching from these achievements : The book may, therefore, serve as a bridge over which those may pass who hitherto have been afraid to abandon more conventional methods.

The chapter on colour is to me the most interesting, as it is the most controversial. In advocating the use of tempera, rather than water-colour, for decorative work, Mr. Littlejohns seems to ignore the fact that these colours are a different tone when dry from that which they appear while wet—the exact shade varying with the amount of water added. This I have found a source of great confusion to the student, and it seems to me greatly to mitigate the usefulness of these colours in schools : one would like to know how Mr. Littlejohns gets over the difficulty.

The use of six standard colours, resembling the spectrum hues as nearly as possible, is certainly well worth trying as a means of combating the present unsatisfactory methods of teaching colour ; though there is perhaps some exaggeration in the assertion that children are puzzled by the method of mixing two colours to make a third. An intelligent child left alone with a paint-box soon makes such discoveries undirected and unaided : a little girl of three years of age once told me the thrilling news that she had discovered that grey could be made by mixing red, yellow, and blue. If Mr. Littlejohns leaves the artist his present palette—as he must, since the proposed standard colours are not permanent—at what age would he make the transition in the case of artistic children ? A renunciation worthy of the ascetic would be required in laying aside the brilliant equipment of the proposed school palette. However, the chapter is the more stimulating because so many questions suggest themselves.

One could have wished that the subject of " art-appreciation " could have been dealt with at greater length : it is a field as yet so little worked experimentally that all contributions are thankfully received. D.M.L.

A New Book of Celebrations : by F. H. Hayward, D.Lit., M.A., B.Sc. (London : Herbert Russell, 35-6, Temple Chambers, E.C.4. Pp. 136. 7s. 6d.)

This book is dedicated to the clergy of Britain of all denominations " in the hope that they will see how it concerns them." It contains ten Memorial Celebrations in outline, four in greater fullness, and three service celebrations in full. In shortened form all of them may be used in schools. The subjects are Wren, Chaucer, Raleigh, Bunyan, Howard, Pitt, Archimedes, St. Francis of Assisi, Molière, St. Joan of Arc, Handel, Beethoven, and Lincoln. The service celebrations deal with the British Empire, the League of Nations, and animals.

In an interesting note on the celebration policy in education we are told that it originated because of the failure of educational methods on their spiritual and humanistic side. Morals and civics and æsthetic appreciation have either been ignored or treated as class-room subjects: as intellectual products and problems instead of as emotional forces. A three-hours school day should be ample for the successful teaching of the rudimentary subjects, and this along with a "series of out-of-school activities (including celebrations) would in all probability be both cheaper and vastly more efficient than the present system." The celebration lies about half-way between a religious service and a lecture or concert: it may lead to a vow, a dedication, an act of homage, a salutation, or some other simple form of attachment to a person or a cause.

Many of the celebrations seem to bring to higher education conceptions essentially similar to those of Pestalozzi's "Leonard and Gertrude." To combine in an æsthetic unity the overture to Mozart's "Magic Flute," the tunes known as "St. Cecilia" and "Integer Vitæ," the views of Lord Bacon on Science, the cone, sphere, and cylinder of Archimedes' investigation, and the eulogies of Plutarch, Heath, and others, is to give to some students at least a concreteness and massiveness of ideas that no class-room methods could ever give. The very simplicity of Bacon's words (with which the Director closes the celebration)—"I have made a beginning . . . the future of the human race will give the issue"—is a witness to the need of Dr. Hayward's attempt to *emotionalize* education. His main concern is that educationists lack deep feeling; we solve no great problems (such as those of creative and spiritual and humanistic education) because we do not see them and we do not see them because we do not feel them. A presentation to students in training colleges of some of the great writers in education in the manner suggested by Dr. Hayward's book would do a great deal to make the dry bones of history live: it might perhaps give the right starting point for that educational reconstruction for which Dr. Hayward has vainly sought in other quarters.

W.J.M‘C.

The Struggles of Male Adolescence: by C. Stanford Read, M.D. (Lond.). (London: George Allen and Unwin, Ltd. Pp. 243. 7s. 6d. net.)

Dr. Read, while disclaiming originality, suggests that his book may be useful to the physician, and may "aid in the education of the parental layman and teacher." It is simply written and may serve as an easy introduction to Freudian psychology in its relation to adolescence. The exposition, however, does not add much that is really new in the way of facts about adolescence, and it is doubtful whether the beginner would not find a specific treatment of either the medical or the pedagogical aspects of the subject more profitable. Freud's "Lectures" would certainly be a more satisfactory introduction for the physician, who would, we think, like further information as to the facts which justify "modern psychological knowledge" in teaching us that the "foundations of our own mental life (apart from that which has been inborn) are laid down in the first five years" (page 27). And Dr. Read's views on education are not always such as would stimulate a modern teacher. Thus he writes: "The more we learn of child development, the more we note that education must be on the lines which the word itself connotes, i.e., a leading out. Our aim then becomes one of assisting nature in the unfolding of a personality by making sure there are no obstacles in the way." Within the space of eight pages we are told that it is "natural in a child to be full of self-interest" . . . "natural to find that the child's interests gradually widen" . . . "the natural tendencies of the child are suppressed and repressed" . . . "it is natural from an early age for affection to be more lavished upon the parent of the opposite sex" . . . "much rebellion, disobedience and excessive emotion is naturally aroused in children" . . . "natural that the child should feel inferior to adults" . . . "natural enough that we should like to mould others" . . . The teacher will be inclined to wonder why such a "nature" needs assistance from him. The author's presentation of the emotional influences of the home and of mental conflict is clear and interesting. In the second part, where he deals with the results of conflict and the paths to health, he draws upon his own experience and gives ample justification for his main thesis that the well-being and happiness of youth lies in parental hands. A valuable feature of the book is the reference of adolescent struggles to the ego and herd, as well as to sexual, instincts.

W.J.M'C.

The Soul of Grammar : by E. A. Sonnenschein. (Cambridge University Press. Pp. ix+120. 6s. net.)

The aim of this book is to show the common structure of ancient and modern Indo-European languages—"to reaffirm and reinforce an inference to which the study of comparative syntax points, viz., that most of the grammatical constructions which live on the lips of the speakers of modern languages and are enshrined in the great literatures of the modern world are identical with constructions that were current in the ancient worlds of Greece and Rome, and may indeed be traced back to a far earlier period, when the parent language was spoken in its original habitat." For this purpose Professor Sonnenschein takes: (1) cases and case-phrases; (2) moods and tenses; and illustrates the similarity of their use in English, German, Latin, French, Spanish, and Greek. In maintaining this community of structure Professor Sonnenschein is vigorously opposed to Professor Jespersen, who holds that modern discrete languages are completely different from the inflexional languages; whereas Sonnenschein shows that, e.g., case-phrases and compound tenses are no innovations.

Professor Sonnenschein hopes that his book may "be found useful by teachers and by students in universities and training colleges, and perhaps also in the highest forms of schools, as enabling them to take a bird's-eye view of the outstanding relations of the languages in which they are interested, and to survey as a whole the field which they have already cultivated in parts." There is no doubt that teachers will find it useful. For one reason, it provides "the scientific justification of the principle of uniformity of grammatical terminology and classification, the practical value of which as an instrument of teaching is not disputed;" for another, it gives most interesting information, not usually found, about the history of grammatical terms.

F.A.C.

Musical Foundations : by John E. Borland. (O.U.P. Pp. 87+viii.)

Dr. Borland in his book "Musical Foundations" has given us a very interesting and concise handbook. He deals with various aspects of music to be taught in schools, and shows what a wide scope the keen music teacher has. He points out a fact, often forgotten in our public schools, that singing is only one aspect of music and that at the period when children's voices break there is ample scope for the teacher in the development of musical education on lines other than vocal. All teachers would be wise to read Dr. Borland's eminently sane chapter on dealing with the appreciation class. They will not only gain wisdom but will also avoid the very prevalent errors which ruin many enthusiastic but mistaken lessons in appreciation.

One is glad to find that Dr. Borland lays great stress on sight-singing. As Dr. Arthur Somervell once said : " We should be shocked to find children on leaving school unable to read the words of the National Anthem, should we not then be equally shocked to find them incapable of reading the music ? "

It is with interest that one notes how Dr. Borland while acknowledging " that the nett gain to musical education through the competitive festivals is enormous," indicates the danger which lies in the too great attention to detail in a narrow compass at the expense of a wide musical education. The reference books which Dr. Borland advises should prove most useful to teachers.

History of the Sciences in Greco-Roman Antiquity : by A. Raymond. (Pp. 245+viii. 7s. 6d. net.)

A Short History of Physics : by H. Buckley. (Pp. 263+ix. 7s. 6d. net.)

Sir Isaac Newton : by S. Brodetsky. (Pp. 161. 5s. net.)

Messrs. Methuen and Co. have rendered to all teachers of science a great service by publishing these three volumes.

The first, from the pen of the Professor of Philosophy at the University of Lausanne, deals with the development of Greek and Roman Science in two main parts, the first dealing with the Historical Outline and the second with Principles and Methods. He deals with mathematics, astronomy, mechanics, physics, the chemical and natural sciences in a scholarly manner. English students of the history of science will be glad to avail themselves of this translation.

Mr. Buckley has attempted a difficult task with some measure of success. Necessarily his treatment of such a wide subject must be general, but he has quoted freely from original sources, and many references are given as a guide to further reading.

The Professor of Applied Mathematics at Leeds University has given us, in the third volume, an example of what such books ought to be.

Secondary School Curricula : by Willis L. Uhl. (The Macmillan Co. Pp. xx+582. 10s. net.)

Professor Uhl has made an exhaustive study of all the problems connected with the curriculum in secondary schools. About half the book is historical, the history being used as a basis for understanding present-day conditions. Such use of history is perfectly justifiable ; though it is difficult for a writer so occupied with modern, and particularly with American, problems to get the right perspective. As an example may be quoted such a passage as this, which to most people's ears ends in anti-climax : " Modern reformers have built upon works of the numerous educators who, beginning with Quintilian, had emphasized child study as basic in planning curricula. The main line of this criticism runs through Rousseau, Pestalozzi, Herbart, Froebel, Colonel Parker, Dewey, and Bobbitt." But it would be unfair to suggest that the historical part is badly done ; on the contrary, it very usefully summarizes the development of the curriculum. In particular, it contains much interesting American matter—e.g., the full text of the 1,749 proposals for the Franklin Academy. The remainder of the book, though dealing primarily with American conditions, contains much that will prove suggestive to the reader on this side.

F.A.C.

The Early Monastic Schools of Ireland : by W. G. Hanson. (W. Heffer and Sons. Pp. 135. 3s. 6d. net.)
The text of four lectures in which Mr. Hanson deals with the Schools, St. Columban, Irish Scholars, and Erigena. A large amount of information has been collated and is set out in an agreeable manner showing something of the great work done by Irish monks in religious and educational apostleship. The story of Luxeuil, St. Gall, Bobbio, is put in a setting which brings into prominence the great debt that Western Europe owes to the followers of St. Columba, who, by the way, is carefully distinguished from Columban, the actual missioner to the Merovingian Court. Credit is given to Irish monks for the share they took in the Mediæval Renaissance and for their Greek learning. Naturally, one looks for and finds reference to Irish MSS., and also is reminded of the diversity of religious observance between Celtic and Roman Catholic Church in the early mediæval period of their history, and of the way in which co-ordination came about. Althogether this is a very interesting book almost encyclopædic, but, nevertheless, one the reader can enjoy.

History of Science Teaching in England : by D. M. Turner, M.A., B.Sc. (Chapman and Hall. Pp. 208. 7s. 6d.)
The aim of this book as described by the author is " to indicate in outline the growth of the scientific spirit in England and the relationship of that growth to the development of a system of education into which the teaching of science gradually became incorporated." It was not an easy task, demanding, as it did, at once the qualities of a scientist and of a historian. But Miss Turner, who has had experience of teaching science in school and of research work in a university, has succeeded well. The book is remarkably full without being heavy, and all aspects of science teaching—school, university, and technical—are dealt with. The author's own beliefs in science values and the reasons for them do not obtrude unduly, but where they do appear they seem to us very sound, and her claims for the study of science moderate and unanswerable.

Composition through Story-Writing : by Robert T. Lewis. (G. G. Harrap and Co., Ltd. Pp. 132. 3s. 6d. net.)
This little book gives an account of a course in composition centred round the writing of a long adventure story. The course is planned so that the burden upon the pupils is not too exacting, while at the same time the work is taken seriously. The first part of the book gives verbatim the advice given to the pupils ; the second part, " The Rule of the Road," contains four chapters on rudiments of composition to which the pupils were referred when errors were made.

The whole forms an interesting suggestive course which should encourage others to embark on similar adventures with their pupils. A.E.C.

The Cause and Cure of Speech Disorders : by J. S. Greene and E. J. Wells. (New York : The Macmillan Co. 1927. Pp. 458+xv. 20s. net.)
This book, by the Director and the Supervisor of the National Hospital for Speech Disorders in New York City, is an attempt " to get the lay or professional reader to view the problem in the way we do at the hospitals." Important sections of the book are devoted to stuttering, stammering, and the voice. Of these the first includes a fairly careful and full analysis of the problem with many valuable suggestions for remedial treatment. Much useful exercise material is to be found in the sections dealing with enunciation and voice development. The whole book is a fairly successful effort to make a difficult subject intelligible in non-technical language.

Pattern : by T. C. Campbell Mackie, M.B.E., A.I.Archts. (Scot.), Head of Design School, Glasgow School of Art. (Longmans. Pp. 36. 3s. 6d.)

The aim of this book is to give a series of analytical notes on the principles upon which patterns are built up, and to suggest a system of study suitable for class-room purposes. The author handles his subject in an able manner, and the form of his presentation is in excellent taste. Illustrations, both in colour and black and white, are good and selected with great care. " Pattern " cannot fail to interest those who desire to gain an insight into the principles and possible ways of designing.

Pestalozzi : by John Russell, M.A. (Allen and Unwin. Pp. 104. 3s. 6d. net.)

A reprint of a much abridged edition of the author's translation of De Guimp's " l'Histoire de Pestalozzi." It is already well known in earlier editions, but this has been published with especial regard to the centenary of the reformer's death. Although an abridgment of a classic work is rarely satisfactory, Mr. Russell has succeeded in giving a striking picture of Pestalozzi, and as we read we realize again how much the world owes to his labours.

The Economic World : by Arthur R. Burns and Eveline M. Burns. (University of London Press, Ltd. Pp. 304. 5s.)

This book is an introduction to the study of economics and is intended for students preparing for the matriculation examination of the University of London. Its subject matter is well arranged, its style is fluent, and the reader's interest is maintained throughout. It should appeal to many besides those who have an examination in view.

John Wesley : by W. H. Hutton, D.D. (Great English Churchmen Series. Macmillan and Co., Ltd. Pp. 178. 6s.)

The most recent biographies of Wesley have been by Wesleyans, and excellent as one or two of these have been it is of special interest to have one by a leading Anglican. The Dean of Winchester has produced a book which is at once appreciative and critical, scholarly and readable. There is no doubt of his estimate of Wesley as a great and good man : yet he indicates the great man's weaknesses with a nice sense of humour, whether it be in his autocratic ways, his treatment of his wife (" miserable wretch " as she might have been described with more truth than Mrs. Pepys), or his ideas of the upbringing of children. Readers of this Journal would be especially interested in Wesley's views on the discipline of the boys at Kingswood School—rising at four, winter and summer, reading, self-examination, and meditation till five ; no games and no holidays ! Correlation with the stern facts of life was secured by taking the children to see a corpse—an object lesson no doubt less dull than some we have seen ! Altogether this is a delightful volume in a useful series. C.W.V.

Martin Luther : by Estelle Ross. (George G. Harrap and Co., Ltd. Pp. 189. 2s.)

A very readable biographical study in the " Heroes of all Time " series : intended no doubt primarily for senior school pupils, but capable of serving older students as a stimulating introduction to a study of Martin Luther and his times.

Immensee : by Th. W. Storm.

Germelshausen : by F. Gerstäcker.

(Bilingual Series. Pp. 57 and 56 respectively. Harrap and Co.)

This is not a new series, but we are glad to call attention to what seems to us an admirable venture, the value of which has perhaps not been fully recognized by students of modern foreign languages. We hope the list of books will be extended, and that the publishers will emphasize to their editors the importance of a close and fairly literal translation for the sake of the student.

Pestalozzi and His Times. (Dent and Sons. Pp. 165. 21s.)

This is a handsome volume produced in connection with the centenary celebrations of Pestalozzi's death, by a Committee under the presidency of Dr. Hermann Escher, Director of the Zentralbibliothek, Zurich. It consists of a brief introduction (of 56 pages) on various aspects of the great teacher's life, followed by over 160 full-page plates, photographs, pictures, facsimiles of letters, and so on, many coloured, chiefly portraying men, women, and plans connected with Pestalozzi's work, with explanatory notes below. The book would serve as a useful companion for the student of Pestalozzi's life and work.

The United States of America. Studies in Physical, Regional, Industrial, and Human Geography : by Albert Perry Brigham, Sc.D., LL.D. (University of London Press, Ltd. Pp. 308. 8s. 6d.)

This book, by the Professor of Geology in Colgate University, gives a systematic account of the main aspects of the geography of the United States on a sound physical basis. It is packed with information, and each chapter is followed by an extensive bibliography. Such issues as racial composition, traditions and language, national unity and education have separate chapters to themselves. The book is eminently suitable for the advanced student of geography.

An Annotated Map-Book of the British Empire : by Keith Le Cheminant, B.Com., F.R.G.S. (Routledge. Pp. 71. 3s. 6d.)

Illustrates, in an admirable way, the value of and the method of drawing sketch maps specially adapted to some particular aspect—physical features, railways, population, etc. It makes no pretence at being a systematic textbook, but would be useful as a supplementary aid to the student and suggestive to the teacher.

Universities' Year Book, 1928. (G. Bell and Sons. Pp. 866. 7s. 6d. net.)
This valuable year book continues the recently introduced list of titles of theses accepted for research degrees (doctorates). The lists of the staffs of colleges and universities are revised.

A History for British Schools : by D. C. Somervell. (Bell. 2 vols., 382 pp. in all. 3s. each.)

These are the first two volumes of a history which Mr. Somervell has planned in four volumes. The first (Foundations) deals with Greece, Rome, and " Christendom." The second covers the period 1066-1714.)

The Life of Rome : by H. R. Rogers and T. R. Hartley. (Oxford, The Clarendon Press. Pp. xi+264. 6s.)

The life of Rome is here illustrated by passages selected from Latin literature and translated. There are some excellent illustrations, and the book will serve as a useful companion for students of Latin.

The Next Chapter : The War against the Moon : by A. Maurois. (Kegan Paul. Pp. 74. 2s. 6d.)

Aptly described as a phantasy and satire, presenting in a vivid way social rather than scientific aspects of the supposed war in the third quarter of the twentieth century.

Living Machinery : by A. V. Hill. (Bell. Pp. xiv+256. 7s. 6d.)

An excellent series of lectures on physiology for young people, from which older ones may well profit, and gain much enjoyment. One of our greatest authorities here proves himself also a master of exposition.

Galatea, or The Future of Darwinism : by W. R. Brain. (Kegan Paul. Pp. 95. 2s. 6d.)

A stimulating and admirably written booklet, partly expository and critical, partly speculative, and indicative of possible future developments.

Educate your Child : by Herbert McKay. (Oxford University Press. Pp. 142. 2s. 6d.)

This is a simple, practical book suitable for parents who are taking an active part in the education of their child before school days.

The Story of Myths : by E. E. Kellett. (Kegan Paul. Pp. 275. 7s. 6d.)

This book discusses the psychological foundations of myths. It is based upon lectures to training college students and should be of great service to teachers dealing with myths.

Nineteenth Century England : by Robert M. Rayner. (Longmans. Pp. xvi+411. 6s.)

Intended for the higher forms of public and secondary schools, this book would also serve as a useful text-book for training college students The treatment is centred round main topics, admirably chosen.

Children, can you answer this ? by G. A. Birmingham. (Allen and Unwin. Pp. 126. 3s. 6d.)

A collection of general knowledge papers of an interesting and representative type.

A Book of Short Stories : by F. H. Pritchard. (Harrap. Pp. 189. 1s. 6d.)
Chapters from India : by G. W. Steevens. (Harrap. Pp. 188. 1s. 6d.)
Pioneers of Invention : by W. and S. Nida. (Harrap. Pp 188. 1s. 6d.)
Episodes from Farthest North : by Fridtjof Nansen. (Harrap. Pp. 191. 1s. 6d.)

Another interesting batch of a most useful and handy series, which would now constitute an excellent nucleus of general reading for a class library.

SUMMARY OF ARTICLES IN OTHER JOURNALS.

Zeitschrift für Angewandte Psychologie, Band 28. Edited by William Stern and Otto Lipmann. Leipzig, 1927. Barth. Heft 1-2. K. Böge: " Eine Untersuchung über praktische Intelligenz." By practical intelligence is meant the kind of intelligence required in dealing with the problems of everyday vocational life in occupations requiring a little skill. Models were constructed founded on typical problems such as fitting grooved and movable woodwork together, packing boxes in a ship's hold, shunting goods waggons. The subjects of the experiment were boys in a Hamburg elementary school, age eight to fourteen. They were tested very carefully one at a time, and cross-questioned in their own conversational language. The progress-with-age diagrams show a marked jump at age nine or ten. Heft 3 u. 4. O. Reimers: " Untersuchungen über die Entwicklung des Tonalitäts-gefühls in Laufe der Schulzeit." The sense of tone is the relation felt between the individual notes of a melody and its key-note. An attempt was made to find by what stages this sense improves. Twelve boys were taken to represent each annual age group from 7.+ to 14.+. This choice was regardless of musical or general intelligence. The first test was to sing a song of own choice and without any given key-note. The observer noticed whether the key note was kept constant and whether a second song was sung in the same key. Tabulated results show what proportion of the boys in each age group succeed. In the next test three well-known songs were taken such as (a) " Stille Nacht "; (b) " Ich Natt' einen Kameraden "; (c) " O Tannenbaum," or Christmas carols. These were played with one or two false notes and the boys asked to detect them. Other tests followed, including up and down the scale, in which none succeeds at age seven and all at age fourteen. The diagrams show at what ages what improvements take place. Heft 5 u. 6. W. Cohnen: " Einfluss der Uebung auf die Wurfleistung von Kindern." Cohnen wishes to challenge the validity of vocational predictions made on the basis of single tests for which no previous practice has been allowed. For this purpose he has tried to discover some test in which after the first test children would be willing to follow it up with almost unlimited practice and frequently repeated tests. Shying at a mark appeals to boys. For indoors he used a ball and a blackboard target marked in concentric rings with a fainter background of squares for reading off the exact position of hits. To be fair as between boys and girls a special method of chucking the ball " Schockwurf " was demanded. The target was lightly dusted with chalk and the ball wetted so as to mark the hits. Tests were held daily at the end of morning school, 11-30 a.m. Great improvement was shown, but unequal progress, so that the order of merit changed. Eighty-eight days seems a long time to pursue such a task; ultimately the scholars began to get stale, and reached a condition in which neither an offer of prizes nor a long holiday had much more effect on their performances. It was in the early stages of practice that the greatest improvement and the greatest changes of order took place.

International Journal of Ethics, XXXVIII, January, 1928, No. 2. Democracy or Education: by William Orton. Critically examines results of modern education; considers that we have almost reached the subversive position of educating for " things as they are, only more so "; concludes that education for democracy as commonly understood is to abrogate the possibility of education, and that leaders in education must be at war with the forms and conventions around them.

Ethics and the Press: by Harvey C. Lehman and Paul A. Witty. Examines the effect of newspaper accessibility upon children; quotes statistics showing that newspaper reading is one of the activities in which children most generally participate; suggest that modern newspapers have lost sight of the aims and ideals of the best journalism and that American editors are becoming aware of the need of control of the type of material printed; concludes that the situation is more serious for the child than for the adult.

XXXVIII April, 1928, No. 3.
RELIGION AND MORALITY: by Edward Scribner Ames. Suggests that religion accepting the highest moral ideals of its age by translating them into forms of art makes them appreciable for those who could not grasp them in their theoretical formulation.

THE PRESENT-DAY PROBLEM OF OVERWORK: by Edward Lyttelton.

PUBLICATIONS ALSO RECEIVED.

ENGLISH.

Essays of Yesterday: selected by H. A. Treble and G. H. Vallins. (Harrap Pp. 272. 2s. 6d.)

A Course of Grammatical Training: by P. H. Prideaux. (Longmans. Pp. 200. 2s. 6d.)

Seventeenth Century Lyrics: edited by Norman Ault. (Longmans. Pp. 524. 10s. 6d.)

An Elizabethan Story Book: selected by Peter Haworth. (Longmans. Pp. 256. 5s.)

Listen Again, Children! by Stephen Southwold. (Harrap. Pp. 256. 3s. 6d.)

A Practical Course of Précis Writing, Book 2: by E. M. Palser. (University of London Press. Pp. 176. 2s.)

Breaking Priscian's Hed: or English as She will be Spoke and Wrote: by J. Y. T. Greig. (Kegan Paul. Pp. 96. 2s. 6d.)

The Merchant at Arms: by Ronald Oakeshott. (Longmans. Pp. 150. 2s.)

Old Celtic Tales: retold by E. M. Wilmot-Buxton. (Harrap. Pp. 135.)

Francis Thompson and his Poetry: by Rev. T. H. Wright. (Harrap. Pp. 142. 1s. 6d.)

More Essays of To-day: ed. by J. H. Pritchard. (George Harrap and Co., Ltd. Pp. 282. 7s. 6d.)

Dictation for Middle Forms: by A. A. Hughes. (Longmans. Pp. 70. 2s.)

SCIENCE.

Secrets of the Earth: by Sterling Craig. (George Harrap and Co. Pp. 192. 1s. 6d.)

Popular Research Narratives. Tales of Discovery, Invention, and Research. Vol. II: edited by Alfred D. Flinn. (Balliere, Tindall, and Cox. Pp. 174. 4s. 6d.)

The Great Physicists: by Ivor B. Hart. (Methuen. Pp. 137. 2s. 6d.)

Experimental Science. Part II: by J. G. Frewin. (Oxford, Clarendon Press. Pp. 111. 1s. 6d.)

MATHEMATICS.

Algebra to the Quadratic : by R. W. M. Gibbs. (Oxford University Press. Pp. 160. 3s.)

Fundamental Arithmetic : by P. B. Ballard, M.A., D.Litt. Book VII. (University of London Press. Teachers' Book, 2s. 6d., pp. 112 ; Pupils' Book, 1s. 6d., pp. 87.)

Arithmetical Dictation : A Systematic Series of Exercises in Mental Arithmetic : by Alfred Wisdom, B.A., B.Sc. Books V and VI. Pp. 47. 1s. 3d. each.)

HISTORY.

The Mediterranean World in Greek and Roman Times : by D. M. Vaughan. (Longmans, Green and Co., Ltd. Pp. 247. 3s. 6d.)

GEOGRAPHY.

An Intermediate Commercial Geography. Part I, Commodities and World Trade : L. Dudley Stamp. (Longmans, Green and Co. Pp. 262. 7s. 6d.)

FOREIGN LANGUAGES.

First Latin Lessons : by C. A. Parsons and C. E. Little. (Harrap and Co. Pp. 308. 3s. 6d.)

A Brief History of French Literature : by N. Scarlyn Wilson. (Librairie Hachette. Pp. 186. 3s. 6d.)

The French Classic Age : by N. Scarlyn Wilson. (Librairie Hachette. Pp. 272.)

French for Young Beginners : by Marc Ceppi. (G. Bell and Sons. Pp. 152. 2s. 6d.)

Avec l'Oncle Emile a travers la France : by G. Eisenmerger et A. Lenet. (George Harrap and Co. Pp. 318. 3s. 6d.)

Active French Course : by Frank A. Hedgcock. Second Year. (University of London Press. Pp. 160. 2s. 9d.)

Selections from Hebel : adapted and edited by F. Norman, M.A., and W. F. Mainland, M.A. (Librairie Hachette. Pp. 48. 1s.)

Simple Spanish Lessons : by Luigi A. Passarelli. (George Harrap and Co., Ltd. Pp. 201. 3s.)

A Graded Spanish Word Book : compiled by Milton A. Buchanan. (University of Toronto Press. Pp. 195.)

Mètodo Practico : by Ybarra Elias. (D. C. Heath and Co., and Harrap and Co. Pp. 236. 4s. 6d.)

La Bastille, Legendes et Histoire : by F. Funck-Brentano. (Harrap and Co. Pp. 202. 2s. 3d.)

Contes Dramatiques : by E. C. Hills and M. Dondo. (Harrap and Co. Pp. 206. 2s. 3d.)

Contes de Flandre : by Charles Deulin. (Harrap and Co. Pp. 136. 2s.)

Le Monde ou l'on s'ennuie : by Edouard Pailleron. (Harrap and Co. Pp. 157. 2s.)

Contes de Minnie : by André Lichtenberger. (Oxford Clarendon Press. Pp. 96. 1s. 3d.)

La Versification du Français Moderne : by A. Taverney. (English Agents, W. Heffer and Sons, Ltd., Cambridge. Pp. 79.)

MISCELLANEOUS.

Food and Health : by A. B. Callow. (Oxford University Press. Pp. 96. 2s. 6d.)

Stentor, or the Press of To-day and To-morrow : by David Ockham. (Kegan Paul, Trench, Trubner and Co. Pp. 96. 2s. 6d.)

Lares et Penates, the Home of the Future : by H. J. Birnstingl. (Kegan Paul, Trench, Trubnerand Co. Pp. 96. 2s. 6d.)

The Forum of Education.

Vol. VI. No. 3. November, 1928.

"Vocational" and "Cultural."

By F. Clarke.

I am moved to offer a few comments on this most baffling question in the hope that they may serve to stimulate a discussion which will help to clear up a confusion that I, at least, find is not easily straightened out. The sense, both of confusion, and of the urgent need for clarification, is deepened by reading Professor Bode's striking book on "Educational Theories," and Professor R. L. Archer's very able review of it.*

Professor Bode argues, I think rightly, that a sound theory of the curriculum must be rooted in a well thought out social philosophy as the true source of pedagogic valuations. This carries the corollary that changes in curricula need to be made responsive to changes in social structure and social values. Further, those who construct or revise curricula from time to time need to make themselves explicitly conscious of such changes. That is, they need first to revise their social philosophy in the light of a changing world.

Diversities of social outlook and structure may be related either to difference of time or to difference of place. The social philosophy of the Renaissance is not the social philosophy of the twentieth century, and the social philosophy of the United States is not the same as that of Great Britain. Professor Archer implies as much when he remarks on the difficulty felt by an English critic in following, for instance, Professor Bode's identification of the old classico-mathematical curriculum with a fixed aristocratic order of society.

But to emphasize diversity is not to deny unity. There may be diversity of gifts, but the same spirit, and to argue that curriculum values must be related to a specific social philosophy is not to deny universal values, the same *semper et ubique*.

**The Forum of Education*, November, 1927.

Accepting, then, the main position, that the construction of curricula is a task which presupposes the social philosopher, however much we may hand over the work of practical adjustment and execution to the pedagogic technician, let me now apply the principle to this elusive distinction between the vocational and the cultural. It would follow from our principle that if there is a conflict between them, it would be just a reflection of a conflict within our social philosophy itself. Can it be denied that the conflict is there ? The rise of what may well be called a " vocational " philosophy of life and society is, surely, an outstanding feature of nineteenth century thought. It has assumed a great variety of forms, and has commanded a wide diversity of advocates. Carlyle and his doctrine of work, Ruskin and his advocacy of the rights of craftsmanship, Morris with his craftsman's Utopia, Marx and the class war, Keir Hardie and the Labour Party—all in some form or other have been concerned with the task of evolving a social philosophy which would resolve and harmonize the bewildering conflicts of vocational interest that the Industrial Revolution had generated. Some, like Marx, set the narrowly vocational in sharp opposition to what had hitherto been regarded as the cultural, and the rising Labour and Socialist parties all over the world have had to struggle to disembarrass themselves of the imputation that they were anti-culture. Others, like Ruskin and Morris, took a larger sweep and tried to vindicate and sublimate the new vocational interests in a social philosophy which aimed at being universal and " cultural " in the best sense. Quite recently Dr. Jacks, in the Stevenson Lectures, has attempted much the same thing, the statement of a doctrine of Constructive Citizenship which takes a conception of craftsmanship and enlightened labour as its essential basis.

And what of Russia, where the struggle for culture amid anguished strivings for vocational bread assumes such gigantic proportions ? Man cries out for bread, and when he gets it, discovers that it is but a stone if it is bread only.

This modern world, driven hard by the search for daily bread, forced to seek it in ways that seem deadly to the things of the spirit, and tortured by the ever-present need of vindicating its activities to itself as a world of free men, comes to most significant expression in the United States of America. Is it to be wondered at, then, that the American mind, more than any other, is exercised in the effort to achieve a social philosophy which will integrate satisfactorily the conflicting conceptions of " vocational " and " cultural " ? Professor Archer dislikes this way of putting it.

Rather than talk of " a new integration of culture and vocation," he would preserve unity all through by using such a conception as Maxwell Garnett's hierarchy of purposes under a Single Wide Interest. The difficulty of doing this lies in the fact that the conflict is actually there ! We are working, many of us, with a social philosophy that involves it, and society itself threatens to be rent asunder by the tension of this inner conflict. Moreover, the use of Maxwell Garnett's conception does not get rid of the difficulty. You have still to determine the place of vocational purposes in your hierarchy. Are they to dominate, as they might, for instance, in Kerschensteiner's philosophy ? Or, if they are to be subordinated to a " cultural " High Priest, what is to be the form of subordination ? Also you have to define what you mean by " vocational." Those who make vocational purposes dominate will mean by the term something quite different from its meaning for those who make such purposes subordinate.

So, we repeat, the conflict is there, dividing the troubled mind of civilized man, much as the conflict of Religion and Politics divided it generations ago. With this conflict as with that, you do not get rid of it by hiding your head in a smooth and comfortable phrase.

I venture to suggest that Professor Archer's reluctance to face it may be itself due to an English social philosophy. Observing English education and following English educational thought from a distance for a number of years, one is struck by the tendency of English educationists to universalize the uniquenesses of English life and society without quite realizing what they are doing. *Continuity* is the outstanding quality of English life, continuity in time over the long stretch of history, and continuity of social structure at any given time from class to class. There are no sharp breaks in the historic process, no insurmountable barriers between class and class. Moreover, the Industrial Revolution itself, rapid as its progress seems in retrospect, was gradual enough. There was nothing cataclysmic about it, and English life adjusted itself to the change by that process of continuous revolution which is so marked in English history. Vocational interests have, therefore, never worn that aspect of stark separateness that they have carried elsewhere. An English Labour Party is not quite like any other Labour Party, for instance. It is more national, more historically-minded, more catholic than the stiffly dragooned proletarians that one finds in other lands. Nor would a great organization like the Workers' Educational Association be possible to the same extent in any other country.

For such reasons as this it is natural that the English mind should tend to minimize the sharpness of the conflict between vocational and cultural interests to-day, and to deny the need for a deliberate movement of integration. At this very moment, English education, by that process of shockless development which is so characteristic of the national genius, is actually at work resolving the conflict.

But experience of other lands, other forms of social development and therefore of other social philosophies, may reveal a need which is not so easily discerned from an English watch-tower. I have no personal knowledge of America, but some experience of another " new " country, with a social structure widely differing from that of England, makes me feel that the demand for integration cannot be so summarily dealt with as Professor Archer seems to suggest. As South Africa moves towards maturity and develops its natural resources, the economic facts become more and more dominant in their influence both on the course of social development and on popular thought about it. Immeasurably the most potent of such facts is the presence of a huge native population capable of much labour, yet living at a standard so low that the white man who has to compete with it is as good as lost. Hence a strong impulse on national education to secure such a training of the white boy that he can maintain himself at a level of skill well above that of the Kafir. It is not surprising that popular educational thought in South Africa, as well as administrative practice, should have shown an increasing bias towards education definitely organized as " vocational." The most recent manifestation of this is a reduction of grants to Universities for the express purpose of finding means to finance more vocational and technical schools. A sharp conflict calling for a measure of integration is clearly enough shown here. It is shown still more strikingly and on more ominous scale in the present division of functions between the Education Authority of the Union and those of the Provinces respectively. In 1924 the Government rejected a plan for the progressive co-ordination of all education under one Union authority in favour of a division between Union and Provinces on the basis that Union took " vocational " education and the Provinces took " cultural " ! So here you have a conflict of conceptions such as Professor Archer tends to deny, or at least to minimize, expressly made the basis of administrative division ! And popular opinion, apprehensive for the future, and seeing nothing but the immediate vocational need, tends to support it. (America can offer parallels, I believe.)

The consequences can easily be imagined. Difficulties arising from such a caricature of a sound social philosophy are legion. Now comes news that in a month or two a National Education Conference is to be held. For what purpose? Expressly to consider measures for the " integration of vocational and cultural education " ! If a solution is arrived at, no doubt it will take the form of a " hierarchy of purposes," but I doubt if the conference would welcome a repetition of the mere phrase as a heaven-sent solution.

The conflict is even more acutely and significantly revealed in popular opinion about the colour bar in industry. The white man says he is intent on saving Western civilization, and to that end he would reserve all higher and skilled occupations for the whites. In so doing he often talks as though he is prepared to sacrifice the spiritual essence of civilization itself to save his economic status. For what other meaning can be attached to declarations, heard sometimes from high places, that even Justice must give way to the imperious demand of self-preservation ?

Could the conflict between vocation and culture find more acute or ominous expression—with culture as a bad second ? Is it any wonder that we who are concerned with South African education are forced to regard it from the very outset as a problem of " the integration of the vocational and the cultural " ?

The same problem is present in England for those who can see it. Even there the " cultural," i.e., civilization itself, may be in some peril from the educational means that are adopted to meet the demands of the " vocational." So I conclude that the conflict is real and the demand for integration urgent. The task of integration is difficult, partly because of the confused psychology that has gathered round its elements, but still more because of the vague and changing definitions of the terms themselves. In other words the social philosophy with which we approach the task is, as yet, neither clear nor adequate. Humanity, as General Smuts so finely said, " has struck its tents and is once more on the march." We are passing through a new Renaissance and a " new " social and cultural order is being worked out, the lead having been taken, apparently, by the United States. Historic examples of the same kind of thing suggest that an adequate philosophy of a social order cannot be worked out until that order is already stiffening its bones in late middle age. The philosophy then attempts to fix it and is apt to take an aristocratic twist. (Professor Bode is quite right in citing Plato's " Republic " here. Plato was seeking an order where people would " stay put," and that, I take it, is the kind of thing Professor Bode means by " aristocratic.")

The incompleteness of our philosophy is revealed clearly enough in current life, and especially in the prevailing doubts about the meaning and limits of the vocational and the cultural. Thus, " vocational " is still frequently used to apply only to the activities of manual workers, on a lower grade in status and salary than " professional " workers, while " cultural " still applies very often to certain selected activities—in art and literature, for example—rather than to a style and colour exhibited by life-activities generally. In other words, current use of the terms is still strongly reminiscent of a social order where it was regarded as a providential disposition that many should labour for a living, while the few, being already provided for, could devote themselves to the fine and good. Those who argue that such a philosophy is no longer held might consider the continued use in England of the expression " working classes," and the body of ideas that it suggests. If I am not mistaken, the whole popular movement, more and more influencing education, is a revolt against that very thing. The social order itself thus passes into a state of flux and so does the philosophy of it. And the very core and essence of the new crystallization that is to work itself out lies in giving stable meaning and mutual adjustment to the two crucial conceptions vocational and cultural.

For these reasons I should argue that no satisfying solution of our problem is in sight yet. But I am convinced that a solution is to be sought in the field of social philosophy rather than in that of psychology. There it seems that Professor Bode is entirely right. Psychology is in itself too neutral. Any psychological theory might be bent to the uses of any kind of social order, a fact which Professor Bode, somewhat surprisingly, fails to note.

Where all is so inchoate and undetermined it is not possible, certainly not for me, to attempt any complete or definitive integration of the two ideas. Professor Bode's reluctance to make such an attempt is quite natural, especially in an American ! But a few suggestions, chiefly of a negative kind, may be hazarded.

(1) The distinction between vocational and cultural does not work out as a distinction between two quite separate groups of " subjects " or activities. I have known teachers of classics whose interest in their subject was entirely vocational, and members of Parliament and administrators who translated Catullus or Plato for love. And we have all known craftsmen to whom a craft was a way of life, a sovereign instrument of culture. At this moment

the printers of Capetown are demanding that the course in English for apprentices at the local technical college should be moulded more directly to the uses of printing. They would be entitled to repudiate a charge that they wish thereby to make it less cultural.

It would seem that vocational or cultural virtue lies not in the specific activity as such, but in the quality and direction that are imparted to it by integration with a total educational conception. Again, then, it is integration that is demanded, and that not of "subjects," but of purposes. This is a task for society as a whole, and not merely for the educational thinker.

(2) The distinction, similarly, does not appear to correspond to separate classes within the community. Plato's " Republic " rests entirely upon the complete acceptance of correspondence. Classes are determined exclusively on a functional basis, and their members, when once allocated, " stay put." Professor Bode is right in pointing to such fixity as essentially non-democratic. For the democratic doctrine, while not denying diversity of functions, refuses to accept any final division of classes on that basis, and maintains that in a very real sense *all* must work, *all* must fight, and *all* must govern. This, apparently, is what democracy means by its fundamental dogma of equality. We came very near to a concrete realization of this condition during the Great War, and the impulse to achieve it is a major factor in world politics to-day. The English system of elementary education is involved in it, having originated as a form of vocational education in this class sense. The question of the status of the central school raises the issue in a sufficiently acute form.

(3) Nor does the distinction correspond to any sharp separation of teaching methods or of underlying psychologies. Professor Archer, quite rightly, points this out. The distinction between vocational and cultural belongs to the realm of ends rather than that of means, and nothing but mischief can result from the illusion that there is any difference in principle between the teaching of simple equations and the teaching of an apprentice to understand and operate a linotype machine. If the practice of vocational schools should lead to an advance in teaching method and to a better understanding of the psychology of pedagogy, that will only be because other schools have neglected their opportunities. The benefit of the advance will be shared by all alike.

(4) Finally, and this may appear a little startling, the distinction does not correspond to any difference of utility or disutility in the respective activities. A world such as ours should have passed

beyond this unreal distinction between the useful and the ornamental upon which Spencer was able to wax so sarcastic. The contrast is merely a survival of an older social order where it was forgotten that the traditional classical curriculum was, in origin, vocational in aim through and through. The very age where the classical curriculum was regarded as the prerogative of a privileged class, free from the degrading necessity of earning a living, was the age which invented the doctrine of formal training to justify this curriculum on the express ground of utility !

Here again, what is needed is not to sharpen distinctions but to clarify definitions. Utility is to be defined more comprehensively and in a way less contaminated by the social prejudices of a former age. The ability to order knowledge in pure logical form, for instance, would appear to be a typical objective of a " cultural " education. Yet both Professor Archer and I endeavour to make an honest living by the exercise of that very thing.

It seems, then, that the wiser course is to turn aside from untenable distinctions and to busy ourselves with fundamental definitions, having regard to the social facts as they are and as they appear to be shaping themselves.

There are some who would define " vocational " so as to cover the whole ground, and to make of it the single wide interest of the Maxwell-Garnett doctrine. But this would seem to be robbing the term of all distinctive meaning, if indeed, it is not to exclude much that is most characteristically human and universal. And is it not forcing language a good deal to treat *all* a man's activities as vocational ? I remember a comic illustrated alphabet in " Punch " which concluded :

> " Z's a Zoologist lying in bed.
> Rotten ! But what can you do with Z ? "

Even Zoologists must sleep, of course, but do they sleep *quâ* Zoologist, any more than a compositor eating tripe and onions does so *quâ* compositor ?

Vocation can hardly cover the whole of life, however widely interpreted, and even for those of us who are called to the noblest and most comprehensive of *métiers*. To endeavour to make it do so seems particularly perverse in such an age as this, and those who undertake the endeavour seem to be unaware of the thoroughly undemocratic character of their objective. Professor Bode, for instance, advocates a form of " guild " representation in politics without realizing how seriously it may conflict with his own democratic principles.

We have rejected the idea of any sharp distinction between vocational and cultural as representing separate groups of activities which have to be acquired separately and then brought together somehow in a unified life. This is the Snedden idea, and if this is what Professor Archer means by " a new integration of vocation and culture," he is quite right in disliking it.

We are left, then, with a new interpretation of Culture itself as the remaining alternative for a solution. That would seem to be the path we have to follow, feeling our way by the aid of all the light that present social facts can give. We shall need to clear our minds of a good deal of prejudice, for, as we approach the task, one thing we shall discover is the extent to which the septic débris of past social history corrupts our notions of culture. We shall discover, too, how fruitful in culture the ostensibly vocational can be, and how valuable for vocation may be those activities which were taught with purely cultural ends in view. It is not for mere show that the big commercial houses are looking round for men with a University training that has not necessarily been vocational. And, on revisiting England, one is struck by the increasingly close resemblance in outlook and mode of life between the skilled manual worker and the " professional " man.

Society itself, apart from the school, will play a large part in the integration. Indeed, it will be the main business of the school to respond to changing social facts rather than to originate change. A machine age promises to bring the remedy for its own ills in this connection. One need only mention the gramophone, the broadcast, and the spur which large-scale production has applied to measures for co-operative control of industry by those engaged in it.

Psychology and the work of the psychological laboratory seem destined to play a subordinate and consultative part. But some of the questions put to psychology will be important. For example, to apply in practice a new definition of culture that does justice to the vocational facts, will demand much reconsideration of the whole doctrine that is unhappily known by the name of " Transfer." We say " unhappily " because the question at issue is rather that of establishing the nature and operation of an identity than tracing any actual " transfer " from one activity to another quite separate activity. But the main task, we conclude, is one for social philosophy. It is a task in which many others, besides " educationists," will have to take part, and its solution will involve much more than a merely formal reconstruction of school curricula. Until is is achieved, education must continue to wander in the land of false distinctions. But everything depends upon its solution, and the most startling achievements of practical psychology in making possible great feats of teaching technique will be but a devil's snare for us if a sound social philosophy cannot show us what to do with these new resources when we have them.

An Experiment in Method for Junior Standards.

BY EVE MACAULAY.

THE object of the experiment described below was to find a curriculum, a method of presenting work, and an environment, which should best suit children of Standard I and II age in their first introduction to the work of the primary school. I am very greatly indebted to the head teacher of the Central Girls' School, Exeter, for carrying out the experiment, and for the most valuable advice which she gave me. The success with which the work was attended was entirely due to her organization and to the thoroughness with which she supervised and directed the preparations for the experiment, the drawing up of curriculum and time-table, and the initial and final testing of the children. I must also thank the two teachers who actually applied the suggested methods, and the many friends of the school who gave the money needed to procure the apparatus and appliances used in the course of the experiment.

OUTLINE OF INVESTIGATION.

The investigators planned a curriculum and a method which were designed to combine individual work with class work, in a manner and in proportions which should permit each child to proceed at her own pace, whilst giving at the same time the absolutely necessary instruction and the training in co-operation that only class work can provide.

They also gave consideration to the very important fact that the school should always afford indirect moral training to its scholars; and they strove to supply an environment and conditions of work which should assist the children to apprehend with conviction the value of self-reliance, self-control, and self-sacrifice, endeavour, honesty, helpfulness, and cleanliness.

PRELIMINARIES.

(1) *Selection and Testing of Children.*

It was decided to use the proposed method for one year—from April, 1926, to March, 1927—in a class of girls (of the requisite age). In order to secure a control by comparison with which the value of the method might be ascertained, the investigators arranged to have a group of children comparable in every way with those who were to perform the experiment. The children selected were all the girls in Standards I and II of the Central Girls' School. These were carefully tested in order to ascertain their mental ratios, educational ratios, and physical condition. For the testing of intelligence, Dr. Cyril Burt's arrangement of the Binet-Simon Scale was used. Dr. Ballard's One-Minute Tests in mechanical reading and arithmetic were employed as scholastic tests, in conjunction with reports given by the teachers on the individual children. The physical examination was made by the Medical Officer of Health for the City of Exeter. The teachers in whose hands they had been for the past twelve months gave their estimates of the moral character of the children. An effort was also made to discover, in accordance with a suggestion made to the writer by Dr. Cyril Burt, particularly nervous and highly strung children. Each child was set to reverse a given number of dominoes, notes being made of the time taken, the number of failures, and the causes of failure. To a certain extent this was not a very exact test, as it was not possible to decide always whether nervousness or clumsiness was responsible for fumbling with or dropping dominoes : but two observers made independent reports and agreed very closely in their verdicts. Finally every effort was made to ascertain the home conditions of each child taking part in the whole experiment.

The children were divided into two groups on the basis of the results obtained from the above tests and enquiries—all such pertinent matters as chronological age, mental age, scholastic age, eyesight, hearing, general health, home environment, attendance, and character, being taken into careful consideration. Each group contained thirty-six children.

The following table shows the average ages and ratios of the two groups—called hereafter the Control Group and the Experimental Group :

	Chron. Age.	*Mental Age.*	*Ed. Age.*	*Mental Ratio.*	*Ed. Ratio.*
Ex. Group	8 yrs. 2 m.	7 yrs. 4 m.	7 yrs. 5 m.	91.4	91.6
Con. Group....	8 yrs. 2 m.	7 yrs. 5 m.	7 yrs. 5 m.	91.6	91.6

(2) *Environment and Equipment.*

The class room in which the Experimental Group was to work was arranged with the object of making study easy and pleasant, and with that of inculcating valuable habits of order and cleanliness.

Separate tables and chairs were provided which would permit of undisturbed work, and which could be folded away when floor space was needed for dancing, drill, games, or dramatization. Each child had a locker in which she could keep her own possessions tidy and apart, behind orange-coloured curtains, chosen to tone with the newly-painted walls. A few good pictures were hung ; two aquaria illustrated pond and stream life ; plants and flowers were provided throughout the year, to be studied and cared for by the children themselves. A piano completed the equipment of the room.

Each child was given an attractively bright overall and light slippers to wear in school, in the hope that these might encourage, respectively, care of the person and neat movement. All children were afforded facilities in the class room for washing and for cleaning their teeth, that they might learn the pleasure of cleanliness.

The members of the Control Group had none of these advantages, their class room being left as it had been when housing Standard II. They still sat at six-foot desks, kept their possessions in a common cupboard, and had no special advantages in the way of dress, nor other facilities for washing than those provided for the whole school. Where the members of the Experimental Group had almost unlimited floor space for dramatic work and games, these children could hardly move between their desks, and had no room for free movement at all. Further the Experimental Group was in a room apart, while the Control Group was only separated from Standard III by a curtain.

The difficulties under which the teacher of this group laboured will be readily appreciated. Indeed, one of the objects which the investigators held steadily in view was that of trying to enforce the serious handicap that such conditions are to teacher and children alike. For the children of the Control Group bodily self-expression was almost impossible, while the neighbouring class made it necessary for too rigid silence rules to be enforced.

It is necessary to say a few words about the two teachers who undertook the work of handling the groups, in order to meet the possible criticism that the greater success of the Experimental Group was due to its teacher being the more able of the two. Both had worked under the head teacher for several years, and she was satisfied that neither one was better than the other. Moreover, each teacher was a strong advocate of the method she was asked to apply. She who took the Control Group infinitely preferred class work, in which she had always been successful. The teacher of the Experimental Group had had a longer experience of class teaching, but none whatsoever of individual work and its accompanying apparatus and new methods, though she displayed a keen interest in both from the beginning of the experiment. The investigator, having carefully studied both teachers at work, with a view to ascertaining their comparability, feels able to assert that, in interest in their respective tasks and in ability to perform them, the teachers were approximately equal.

(3) *Curriculum and Time-table.*

Each class worked to exactly the same curriculum, of which it is not necessary to give details, though an outline of the ground covered may be interesting.

English.—Training in speech. Language rhythmics. Training in talk. Telling of stories. Dramatization of lessons. Performance of small play. Training in writing. Training in reading. Training in appreciation of literature. Stories and poems suitable to the age of the children.

Number.—Recognition, analysis, synthesis, knowledge, and notation to 1,000. Addition. Subtraction. Building up and memorization of multiplication tables. Division. Multiplication. Decomposition of money. Addition, subtraction, and multiplication of money. Fractions. Problems at all stages.

Geography.—Homes, furniture, food, clothes, etc., of children in Spain, China, Papua, Iceland, Africa (Kaffir and Arab), Japan, Switzerland. Geography of home district. Plan of class room. Plan showing route home from school. Plan showing route from school to places of interest in the city. Pictorial weather chart.

History.—Stories of and talks on tree dwellers, cave dwellers, pit dwellers, early dwellers in houses.

Nature Study.—Homes in the animal world. Horse-chestnut and beech trees. Flowers in their season.

Hygiene.—Care of skin and teeth. Clothing. Fresh air and sunlight. Cleanliness in the street. Safety first. Good manners.

Handwork.—Models to illustrate history and geography schemes. Raffia work. Modelling of animals. Paper cutting for picture composition, e.g., illustrations of rhymes, stories, etc.

Music.—Breathing. Ear-training for rhythm and pitch. National and folk songs. Singing games. Staff notation.

Physical Training.—Exercises. Singing games. Country dancing.

As far as was possible each group spent the same amount of time on the various subjects of the curriculum, though the greater freedom permitted to the Experimental Group may have led to some children giving a little more time to certain aspects of particular subjects.

For instance the time to be devoted to English was less exactly apportioned out for this group, but the teacher covered the entire syllabus taken by the Control Group during the course of the year, and, as will be seen in the analysis of the results, the children had evidently no less instruction in the stories and poems selected. (This point is mentioned to show that any superiority found in the reading, spelling, and composition of the Experimental Group was not gained by its members having been able to devote more time to these subjects than was afforded for the members of the Control Group.)

The two time-tables were arranged as follows :

CONTROL GROUP.

Time.	*Monday.*	*Tuesday.*	*Wednesday.*	*Thursday.*	*Friday.*
9-20 9-45	Scripture.	Scripture.	Scripture.	Scripture.	Scripture.
9-45 10-20	Arithmetic.	Arithmetic.	Arithmetic and Voice Production.	Arithmetic.	Arithmetic and Voice Production.
10-20 10-45	Drill.	Arithmetic.		Arithmetic.	
11- 0 11-30	History.	Singing.	English.	Geography.	Singing.
11-30 12- 0	Reading.	Geography.	History.	English.	Writing.
2- 0 2-45	Needlework.	Drawing.	Needlework	Games. Hygiene.	Handwork.
2-45 3-15					
3-25 3-55	Nature Study.	Writing.	Writing.	Reading.	Recitation.
3-55 4-25	Reading.	Literature.	Recitation.	Writing.	Literature.

Experimental Group.

Time.	*Monday.*	*Tuesday.*	*Wednesday.*	*Thursday.*	*Friday.*
9-20 9-45	Scripture.	Scripture.	Scripture.	Scripture.	Scripture.
9-45 10-15	Drill.	Eurhythmics.	Language Eurhythmics.	Rhythmic Music.	Language Eurhythmics.
10-15 10-45	Geography.	History.	Nature Study.	Drawing.	Hygiene.
11- 0 11-10	Mental work in Number.	Mental work in Number.	Mental work in Number.	11-0—11-30 Drill.	Individual work in Number
11-10 12- 0	Individual work in Number.	Individual work in Number.	Individual work in Number.	Mental work in Number.	and Reading.
2- 0 2-45	Needlework	Individual work in Reading & Writing	Needlework	Individual work in Writing or Reading.	Handwork Expression in History or Geography
2-45 3-15					
3-25 3-55	Individual work in Reading and Writing.	Raffia. Handwork.	Individual work in Reading and Writing.	Clay Modelling.	Story with Dramatization.
3-55 4-25				Games.	

(4) *Method.*

Both groups were divided into three sections—advanced, medium, and backward children—for arithmetic, reading, and writing.

In the Control Group instruction was always given generally to the whole section in these three subjects, and to the whole class in history, geography, nature study, English, literature, and hygiene. Naturally the teacher helped individual children, but the primary method of presentation was to the group and not to the individual.

Spelling, composition, and the rudiments of grammar were also taught, and formal instruction in drawing was given.

In the Experimental Group the presentation of work was based upon the three following considerations : (1) The needs and the stage of development of each individual child were to be the paramount factor ; (2) In every subject expression work was to play a very considerable part ; (3) Formal instruction was to be reduced to a minimum in all subjects, so that the children might acquire their knowledge in meaningful experiences rather than by the categorical—and often unapprehended—imperatives of isolated formal lessons.

Therefore, in Arithmetic, Reading, Writing, and Handwork, each child worked alone within her section, at special apparatus which will be described later.

Recitation, Music, and Singing were taught by eurhythmics in order that the fundamental basis of rhythm might be apprehended by the children, and because the bodily movement associated with this subject is especially valuable, and truly instructive, to children of an age when all expression is closely allied with, and best realized by, physical sensation.

This consideration of the educative value of guided physical expression prompted the decision to teach literature entirely by the dramatic method. The children acted every story or poem presented to them, gesturing and moving as they wished and using their own words as much as possible. History and Geography lessons were also dramatized, as was nature study, when feasible. A special period was set apart for modelling, free drawing, or paper-cutting, in connection with these subjects ; so that the children should actually see the tools, weapons, houses, flowers, and so forth of which they had been hearing.

In Handwork and in Drawing no formal instruction was given. The children worked in their own way, and at aspects of the subject chosen by themselves : Naturally the teacher corrected inaccuracies of fact, but otherwise she contented herself with making suggestions and in giving advice when it was sought.

Spelling and the rudiments of grammar were not taught at all ; and no written composition was done until January, 1927. Throughout the year instead, Oral Composition played an important part in the work done in History, Geography, Literature, and Nature Study. The children were expected to talk about all that they did and heard, and were guided in the orderly arrangement and correct expression of their ideas.

(5) *Apparatus.*

The use of this was confined to the Experimental Class.

The number apparatus was that suggested in a most excellent course on individual work in number, given by the *Teachers' World.*

The details cannot be given here, as they remain the property of the initiators of the course : but it can be said that the method is highly satisfactory, and that nearly all the apparatus can be made, at a quite small cost, by the teacher or by the older children in the school.*

For reading, Cruickshank's Reading Apparatus, Stages 1 to 9, was used, and this was supplemented by a number of other books, to which the children had free access. Fairy stories, children's annuals, " The Children's Encyclopædia," " Tales of Robin Hood," children's anthologies, " The Jungle Book," " Winnie-the-Pooh," and such books were kept in a cupboard and, whether or not a child could read, she was at liberty to take down any volume and to study its text or pictures.

(6) *General Organization.*

In the Experimental Group, the children washed and cleaned their teeth as soon as they came to school in the morning, after which they had handkerchief drill. Plants, flowers, nature study specimens, and weather charts, were all tended by various members of the class, the children taking it in turns to do the different tasks, so that all had a share in the work, and it became stereotyped to none. They erected and put away their own tables and chairs, and were made communally responsible for order and tidiness of the class room. Access to books and apparatus was free, and choice was only guided when it was found that a child had taken something which could be of no value to her, or when she remained too long over any particular stage. Each child was expected to care for anything with which she was working, and to see that it was put away in good condition, " for the sake of the girl who would want to use it next." Personal property—toothbrush, powder, mug, books, pencils, pens, and needlework,—was kept in the child's own pigeonhole, in the care of which she was encouraged to take pride. The children were permitted to work together provided that each genuinely carried out what she was doing and did not merely copy from her partner. Talking about work was allowed, and the more advanced were expected to help the backward members of the class.

The members of the Control Group, as has been said, were afforded none of these facilities, and their freedom was much curbed, especially where talking and working together was concerned, by the presence of the neighbouring class.

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*Personal Postal Course in Individual Work. Evans Bros., Montague House, Russell Square, W.C.1.

FINAL TESTING.*

In March, 1927, the head teacher and the writer tested all the members of both groups in order to ascertain the scholastic attainments of all the children. The writer also made qualitative notes on the moral behaviour of the members of both groups over a period of three weeks. The children were given a test on the choice of an ideal character, since this had been found to give certain information on the moral outlook of writers on this subject. Arithmetic was tested quantitatively by using Dr. Burt's "Tests in Mental, Mechanical, and Problem Sums." His tests in mechanical reading and in comprehension of matter read were also given, which latter tests were supplemented by passages of equal difficulty, selected and standardized by the writer. Both groups wrote a composition on the subject "A Walk in the Country on a Sunny Day." Dr. Burt's tests in Spelling and Dictation were also given. The writer heard and took examinations in Literature, Geography, History, and Nature Study.

RESULTS.

GENERAL SURVEY.

There is no doubt that the results obtained in the final testing and examination of the two groups of children proved that the choice of methods of instruction, discipline, and moral training tried in the Experimental Group were justified.

The facilities provided for individual work in Arithmetic resulted in a more thorough knowledge of arithmetical method being shown by a majority of girls in the Experimental Group than was demonstrated by a minority in the Control Group.

The value of individual work in reading, and particularly of much silent reading, was shown by the fact that the children of the Experimental Group had the greater comprehension of material read, a wider vocabulary, better style in composition, a richer content of mind, and were the more fluent in speech.

These children were also more fully informed concerning those class subjects of History, Geography, Nature Study, Literature, and Hygiene, in which they had had less time than the Control Group devoted to class teaching, and more to expression in either handwork or dramatization. In examination the members of the Experimental Group spoke of people and events as if they *knew* or *had witnessed* them; their interest was real and personal; they could draw or model quite recognizable reproductions of the lives, homes, tools, weapons, clothes, and so forth, of the subjects of History and Geography lessons; gave the words and actions of the characters dealt with in Literature; and talked fluently about the material of Nature Study and hygiene lessons.

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*Unfortunately many children were away during the final testing, and there was no subsequent opportunity for examining them.

Their general attitude to work was that of being eager to discuss what they were doing or had learnt, and one gained the impression that everything of which they spoke was a reality in which they were joyously absorbed.

In the Control Group, the children were well and soundly, but less extensively, informed; their answers to questions tended to be in set phrases, and they appeared unable to discuss their work beyond the reproduction of portions of lessons or of notes which they had written. The examiner was unable to extract any expressions of personal opinion or preference from individual members of this class.

At the end of the year the writer was in almost constant association with the members of both groups for three weeks, and was therefore able to form an opinion on the moral effect of the methods employed in the Experimental Group. She found the children here to be more obliging, more willing to work, more responsive, more honest, and readier to help one another and her. They were also noticeably tidier and cleaner, and generally happier and more animated in appearance and demeanour than were the members of the Control Group.

ANALYSIS OF RESULTS.

Reading.

Probably the most striking aspect of the whole experiment was the difference which the wide range of reading matter afforded, and the method of silent individual reading, created between the two groups.

This could be observed, on the part of the Experimental Group, in the following respects:

(*a*) Greater comprehension of subject matter, in which should be included a greater ability to tackle problem sums.
(*b*) A wider and more correctly applied vocabulary.
(*c*) Better performance in dictation.
(*d*) Better composition in these respects—more ideas forthcoming on a particular topic, wider vocabulary, more connectives used.
(*e*) Richer content of mind.
(*f*) Greater fluency in conversation.

ANALYSIS OF READING TESTS RESULTS.

Mechanical Reading.

The children of the Control Group, accustomed to read aloud throughout the year, did better than those of the Experimental Group in this test, as the following figures show. They also pronounced their words better, more clearly, and with more confidence. There appeared, however, to be no transference of these qualities to their general conversation. (Indeed, in neither Group did the children speak with the same care and precision as that with which they read, though the children of the Experimental Group were distinctly more audible, probably the result of being more accustomed to conversation.)

MECHANICAL READING.*

Age Group	13	12	11	10	9	8	7	6	5
No of children at each age :									
(Experimental Group, 28 children)	0	0	0	3	4	8	5	4	4
(Control Group, 33 children)	1	0	2	3	5	8	10	4	0

*In this, and all subsequent tables, the number of children actually tested in each Group is given.

Comprehension in Reading.

A qualitative statement of the way in which the children approached the work is of interest in regard to the Comprehension Test. The members of the Experimental Group displayed confidence, and understood at once what was to be done. No child needed to have the instructions given her more than once. The children in the Control Group were bewildered by the direction : " Read what is on this card and then do what it says. You need not read it aloud to me, but you must do what it tells you." Out of the 29 children tested in this latter group, 23 needed the further encouragement which is permitted. All read aloud, and when given equal supplementary tests to do silently, were unable to perform them ; while 17 out of the 28 children tested in the Experimental Group read silently. The average time between concluding the reading and successfully carrying out the instruction was—in the Experimental Group 25 seconds, in the Control Group 75 seconds. Two children in the Control Group read up to their chronological age, none exceeded it. In the Experimental Group 7 exceeded their chronological age, and 10 equalled it.

COMPREHENSION IN READING.

Age Group	13	12	11	10	9	8	7	6	5	4
No of children at each age :										
(Experimental Group, 28 chn)	—	1	3	2	6	6	5	4	1	1
(Control Group, 29 children)	—	0	0	0	3	3	8	11	3	1

In regard to the approach to problem sums, in the Experimental Group the top girl had read correctly 19 out of the 30 problems set ; the errors were in mechanical working. In the Control Group the top girl had read 9 correctly. The average numbers of problem sums correctly approached was—in the Experimental Group 7.5, in the Control Group 2.

It appears from these results, qualitative and quantitative, that class reading aloud from one or two books at most is of very little value in helping the child to comprehend what he is studying. It does not inculcate the idea that reading is primarily for information ; comprehension is actually inhibited when the child is not permitted to read aloud, while the greater mechanical accuracy of pronunciation gained by this method is not transferred to the child's everyday speech.

Vocabulary (Speaking).

It was of course impossible to obtain an exact quantitative record of the vocabulary of the children, but the writer attempted to estimate it by entering into conversation with each member of each group at some time or another during the period of final testing and by noting the number of different substantives, verbs, adjectives, and connectives used by each child. She also noted the number of complete sentences given. The topic of conversation was always the same—Which was the child's favourite lesson, and why ?

The following table shows the average proportions in which the Experimental Group excelled the Control Group in the parts of speech measured :

Adjectives	2 to 1
Connectives	2 ,, 1
Substantives	3 ,, 1
Verbs	3 ,, 1

The average number of complete sentences which was given in response to a single question or comment was :

Experimental Group	3
Control Group	1.5

The greatest number of sentences received from any individual child was :

Experimental Group	8
Control Group	4

Content of Mind.

In order to test to what extent this had benefited by reading, the children were asked to give the names of any people or animals about whom they had ever read. A time limit of twenty minutes was imposed.

In this time the Experimental Group gave 202 *separate* characters or animals, while the Control Group gave 81.

The average number given by the Experimental Group was 14, by the Control Group 4.

On various subsequent occasions the examiner entered into conversation with certain of the children in both groups over some of the characters that they had chosen, and found that the children of the Experimental Group were able to give the substance of the story in which the individual or animal had appeared, while the Control Group tended more to give isolated facts about their choice. At the same time it must be borne in mind that the greater practice in conversation enjoyed by the Experimental Group enabled the children to make a better show to a very great extent. The members of the Control Group could also give the substance of the story when it was elicited from them by questions, but they were less conversant with descriptive details.

The general inference to be drawn from the results of all the reading tests combined is that silent reading, to which a considerable portion of the time in the school might be given, is a most valuable method. As a consequence of being permitted to read individually and silently children can comprehend with ease both what they read and what is said to them. They can converse fluently and in well-chosen terms. They have a wider range of imaginative experience in the light of which to interpret reality, and as a starting point for further imaginative activity.

Dictation.

The Experimental Group was given no spelling or dictation during the whole session ; the Control Group received instruction in both subjects.

It is again of interest to notice, qualitatively, certain aspects of the way in which the children approached the Dictation Test. The two groups were told to try and spell all the words read whether they understood them or not, and the examiner continued to read until all had stopped writing. All in the Control Group had ceased to write at the end of 300 words, only four going beyond 260. In the Experimental Group six continued to write up to 400, and the following words were rendered correctly by one or other of these six: Pianos, sewing machines, model, excellent, adventures, (one child had spelt " Yachts " as " Yocths." It afterwards transpired that she had seen the word somewhere and had enquired about it.)

Another feature of the approach to the tests was the fact that the children of the Experimental Group were more careful in observing the directions for beginning a new line; 50 per cent. of the Control Group neglected to obey this instruction against 20 per cent. of the Experimental Group.

In the Graded Vocabulary Test the Control Group did better in the spelling of certain words which they had learned in formal spelling lessons than did the Experimental Group, but in spite of this their general position was lower, the members of the latter group spelling 22 per cent. better in the whole test.

The age groups for the two tests combined run as follows:

SPELLING AND DICTATION.

Age Group	9	8	7	6	5	4	*Under* 4.
No of children at each age:							
(Experimental Group, 35 children)	3	11	14	5	1	1	0
(Control Group, 32 children)	2	3	16	4	2	1	4

Composition.

The Experimental Group did only oral composition for the first two terms, the Control Group did some written work throughout the year. Further, as has been stated, the children of the experimental Group had many opportunities for enlarging their vocabulary and enriching the content of their minds which were denied to their fellows who were not able to converse so freely or to read so widely.

The subject set for the final test was: " A Walk in the Country on a Sunny Day." No time limit was set, and no directions were given to either group as to arrangement, method of approach to the subject, and so forth.

The compositions were not marked relatively to any standardized tests on the subject, and the results are therefore not included in the final reckoning of scholastic age. The points of difference between the work of the two groups can best be set forth by an examination of certain characteristic aspects of the work.

In the first place the compositions of the Experimental Group were more consecutive and more closely woven with appropriate connecting words. There was strong evidence that the children were describing an actual walk actually taken. Only one child gave information which was plainly the outcome of careless imagining, saying that she had picked a bunch of dahlias in the hedge ; 12 of the Control Group gave such associations of flowers as " primroses and hips and haws " gathered at the same time, or spoke of lambs and birds' eggs being seen in winter surroundings. No child in this group mentioned any specific place as having been the objective of the walk—a further indication that no single definite walk was selected and described. In the Experimental Group ten local places were named as having been visited.

The general impression that one gained from reading these essays was that the children of the Experimental Group were more at home in this medium of expression, which was less a school task than a way of telling an interesting adventure. Ideas appear to have come easily to the majority of them and—certainly a result of their reading—words in which to clothe these ideas.

The compositions were marked under the headings cited below, with a maximum of 20 or 10 for each. The average mark is given in the following table.

	Experimental Group.	*Control Group.*
Length	12	12
Ideas	10.3	6
Continuity	5.7 max. 10	3.5 max. 10
Punctuation	4 ,, 10	4 ,, 10
Vocabulary	9.7	6.9
Connectives	9.5	7.5

An analysis of this table shows that there was practically no difference in length of essay between the two groups, consequently the greater number of ideas given by the Experimental Group was not due to their having taken more time. (Actually each group took almost exactly the same time.) It is also evident that the greater practice in written composition on the part of the Control Group did not afford any greater facility in continuity of expression nor in the use of punctuation. The effects of wider reading are to be seen in the marks gained by the Experimental Group for Vocabulary and Connectives, while the two terms' oral composition, and continued opportunities for conversation almost certainly accounts for the fertility of ideas and continuity of expression.

Arithmetic.

The head teacher of the Central Girls' School has always found that this subject presents peculiar difficulties to her scholars, the great majority of whom come from very poor homes, and who are—probably on account of under-nourishment and lack of sufficient peaceful and healthy sleep—unable to give the concentration which arithmetic pre-eminently needs. It was evident, in observing the children as they performed the arithmetic tests, that they found the subject difficult and fatiguing, flagging far more quickly than when the other tests were being taken. There was no difference in attitude to the task perceptible, the children in both groups being as keen as ever, but bodily fatigue was early manifested in restless movements, flushed or pale faces, wandering eyes.

In both groups the papers were less tidy than those given in after the other tests had been performed. Out of the odd 220 received for spelling, dictation, and composition, only 23 could be called untidy, while out of the arithmetic papers (also about 220), 214 failed to come up to the high standard of order and cleanliness set in the former papers. Whilst the Mental Arithmetic Test was being given, 38 pencils were broken between the two groups as against five broken during the course of the Dictation Test, which is cited as being most near in conditions of presentation and working to mental arithmetic.

The tests used were Dr. Burt's Mental, Mechanical, and Problem Tests, and the following tables will show how difficult the children found the work. There is still, however, a slight difference to be seen between the two groups, and this would be more apparent with a different method of marking. Dr. Burt gives no marks unless the sum is correct, and this was done while correcting these papers. At the same time, the children of the Experimental Group had evidently benefited, so far as comprehension of principles and method were concerned, from the year's work on apparatus, for they were 25 per cent. better than the children of the Control Group in their method of attacking the sums, their errors being in mechanical working of sums which they knew how to approach.

MENTAL SUMS.

Age Group	9	8	7	6	5	4
No of children at each age :						
(Experimental Group, 33 children)	3	12	6	12	—	—
(Control Group, 34 children)	1	8	10	12	1	1

MECHANICAL SUMS.

Age Group	7	6	*Below* 6.
No of children at each age :			
(Experimental Group, 36 children)	12	5	19
(Control Group, 34 children)	5	5	24

PROBLEM SUMS.

Age Group	10	9	8	7	6	*Below* 6.
No of children at each age :						
(Experimental Group, 33 children	1	2	3	17	7	3
(Control Group, 31 children)	—	—	3	18	6	4

The only inference to be drawn from these figures is that the individual work evidently enabled one or two clever girls in the Experimental Group to forge ahead, and brought the very slow children on a little.

FINAL SCHOLASTIC AGE.

The writer feels that a grave mistake was made at the outset of the experiment in not giving more comprehensive scholastic tests. This does not mean that the two groups were not comparable scholastically : Dr. Ballard's One-Minute Tests and the knowledge of the teachers ensured that this should be so, the children being paired after the most careful consideration, and to the entire satisfaction of the two teachers who were to have the respective groups.

The weakness is that the three mechanical tests given in reading and arithmetic gave too high an educational age, the very retarded and even the defective children being able to score some points in the initial testing where they could do nothing or almost nothing in the final testing. Moreover, these Devonshire children from a slum area were marked in the final testing on the same scale as Dr. Burt has established for the average London child. Consequently, the final educational age for the two groups is lower than that given at the beginning of the year's work.

(It may be of value for the writer to state that, after having given Dr. Burt's scholastic and many of his mental tests to 1,236 Devonshire children, she has found that they are, on an average, twelve months behind the average London child.)

Nevertheless, though the initial and final educational ages are not comparable, the final figures obtained are comparable within themselves.

Thirty-three children in the Experimental Group, and 31 in the Control Group, did all—or all but one section—of the final examination. If a child only missed one part of the arithmetic, reading, or spelling test she was given an average mark, and included in the final list.

The tables run as follows :

FINAL EDUCATIONAL AGE.

Age Group	9	8	7	6	5	4	*Less than* 4.
Experimental Group ..	5	4	7	7	6	1	3
Control Group	—	4	7	9	5	1	6

The average educational age for the Experimental Group is 6.1 years, for the Control Group, 5 years.

The general inference to be drawn from this method is that it enables the clever children to make more progress than is possible for them in class work, and that backward children, though they cannot, in one year, at all events, approximate to their chronological age, are at least able to make some progress.

It should also be borne in mind that no figures really show the gain which the investigators are satisfied accrued to the members of the Experimental Group. Examination in Literature, History, Nature Study, Geography, and Hygiene, convinced the writer that even the most backward child had gathered a few fruitful ideas, had some real knowledge on these subjects. Moreover, all these children obviously took the greatest pleasure in dancing and singing, some of the most backward scholastically being the most proficient in these subjects. Every child in this group was able and ready to take some part in dramatization freely and happily.

In short, it was clear that no child felt herself to be in any way outside the activities of the class, or suffered from a sense of inferiority and incompetence, since each had opportunity to be actively engaged in something that she could do, something the significance of which she could apprehend, throughout the school day.

In the Control Group on the other hand, all the good will and all the hard work of the teacher could not enable her to let her clever children proceed at their best pace without the apparatus and the books which could occupy their whole time fruitfully, while her backward or defective scholars were denied the opportunity afforded those in the other group of making some progress and of feeling some satisfaction in the slow but thorough mastery of elementary apparatus.

Then all the children were cramped for self-expression by the limited floor space, by the rubbing shoulders in crowded desks, by the inhibition of the neighbouring class. At an age when experience is best obtained by physical movement and sensation, they were condemned by the circumstances of their environment to *listen* when they should have been *doing*.

MORAL EFFECTS OF EXPERIMENT.

Though the moral effect of the experiment was particularly striking, it is only possible to speak in very general terms on this matter, since the children were too young to perform any of the standardized moral tests in existence.

An attempt was made to find the moral outlook of the children by setting them to choose an ideal character giving reasons for their choice. The question was: "What person whom you have known or heard of or read of would you most wish to be like? Say why you choose this person." A time limit of thirty minutes was set. The results were as follows:

EXPERIMENTAL GROUP.

Characters Chosen.	*No. of Children making this choice.*
Child Friend	18
Gulliver	1
Fairy	2
Jesus or God	3
A Queen	1
Snow White	1
An Esquimau	1
A Teacher (Teacher of class)	2
St. Elizabeth	1
Robin Hood	1
A Hospital Nurse	1
Red Riding Hood	1
"A Good Little Girl in a Book"	1
Rose Red	1
Adult (the writer)	1
Total	36

CONTROL GROUP.

Characters Chosen.	*No. of Children making this Choice.*
Child Friend	24
Adult (women who keep shops)	4
A Queen	1
A Man	2
"A Farmer's Little Girl"	1
A Boy	2
God	1
An Arab	1
Total	36

REASONS FOR CHOICE.

EXPERIMENTAL GROUP.

Reasons.	*No. of Children giving Reason.*
Personal beauty	8
Quietness	1
" Because she gives presents "	4
Good to mother	4
Has adventures	6
Can hear music	1
Plays with me	4
Has pretty clothes	14
Is kind	3
Does not fight	1
Does not swear	1
Is always gentle	1
Loves everyone	2
Helps people who are ill	1
Is good to birds	1
Can go out and pick flowers	1
Personal attainments (good at lessons)	2
Is wise	1 (of God)
Possessions admired	5 (one is God's Crown as seen in a picture)
Everyone loves her	2
Shares money or sweets	2
Able to mind babies	2
Because a beggar baby turned into Jesus in her bed	1 (of St. Elizabeth)
Strength	4
Always thinks of poor people in trouble	2
Has nice manners	1
Does not run after cars	1
Is never rough	1
Serves in a shop	1
Is obedient	2
Total	80 reasons from 36 children.

ANALYSIS OF REASONS.

Moral choice	36 or 45. 0 per cent.
Care of person	14 ,, 17. 5 ,,
Adventure (Book persons)	9 ,, 11.25 ,,
Desire for power	21 ,, 26.25 ,,

The analysis is made on the same lines as those adopted in "An Investigation into the Development of Moral Conceptions in Children." Part II, FORUM OF EDUCATION, June, 1926.

CONTROL GROUP.

Reasons.	*No. of Children giving Reason.*
Personal beauty	6
Because she gives presents to me	2
Plays with me	2
Is kind	7
Personal attainments (good at lessons)	5
Possessions admired	5
Strength admired	3
Is good tempered	1
Is clean	4
Always tells the truth	1
Total	36 reasons from 36 children.

ANALYSIS OF REASONS.

Moral choice	9 or 25.0 per cent.
Care of person	10 ,, 27.7 ,,
Desire for adventure	0 ,, 0 ,,
Desire for power	17 ,, 47.2 ,,

As is to be expected in children of this age, the desire for power is very strong ; they are naturally oppressed by their environment, and tend to assert themselves by craving such attributes as they hold connote power, but it is significant to note that the desire of the Control Group exceeds that of the Experimental Group by 11 per cent. There is also something of interest in the choice of certain girls " because they are good at lessons." In the Experimental Group the two choosing thus were clever girls who selected good scholars higher up in the school ; in the Control Group the five who wrote this were backward children wishing to be like the cleverest girl in the same class. The first choice savours of legitimate ambition, the other of a rather despairing envy.

Again, the type of possession desired varies somewhat in each group, a particularly interesting example of this being that several girls in the Control Group wished that they could be like girls in the Experimental Group because they had "desks of their own," "pretty pinafores," "fishes and tadpoles in a glass in their room."

So far as actual moral choice is concerned, we find that this type of reason for wishing to resemble the ideal character exceeds, in the Experimental Group, the Control Group by 20 per cent., and that the reasons are more varied. Out of the nine children giving such a reason in the latter group, seven only mentioned "kindness," while consideration of the reasons given by the children of the Experimental Class tells us that practially all the moral qualities which we might expect from young children are given by one girl or another.

Of course one cannot attach ultimate significance to this part of the investigation, but the fact remains that the group which had had the more truly community life during the year showed the more social spirit in answering the question set.

The influence of the wider reading is again evident, the children having a greater range of characters from which to choose, and showing a fuller conception of what are the good and desirable aspects of life.

Moral Effects as Evidenced by Behaviour.

During her three weeks' association with the children, the writer made notes on the behaviour of both groups, and found certain characteristic differences, quite evidently the outcome of the type of environment in which the children had been working.

Two incidents may be quoted as particularly significant.

It happened that, during the final testing period, each of the teachers in charge of the two groups was away ill, and the examiner took their places for certain periods. On one occasion she went to the Experimental Group shortly after the children had gone to their room after prayers: she found each child fully occupied with some kind of work; there was a certain buzz of conversation, but it arose either from two children working together or from the fact that one of the more advanced girls was helping a backward child. Some were reading, others writing, others working at number apparatus. A few were sewing or modelling; five were singing quietly from a class song book in a corner, and the oldest girl was showing two mentally defective children a picture book. All were doing something. When the Control Group was visited under exactly similar circumstances all the children were found to be playing, no one had made any effort to get to work. This is of course no reflection on the children themselves, but it shows clearly the defects of the method under which they had worked. Where the children of the Experimental Group were able, accustomed, and eager to go to their pigeon-holes and get any material they might require, those of the Control Group were all dependent upon a monitress to fetch and distribute books, pencils, and so forth, from the one cupboard where all were kept ; and none had had the impulse to get this done.

In the second place the examiner noticed a more kindly spirit amongst the children of the Experimental Group. Never once did a child tell her " tales " of another child during the period when she was testing, though this happened many times when she was working with the Control Group. On one occasion a really interesting and significant thing took place in the Experimental Group. A girl by accident knocked another down and opened a freshly-healed wound, making it bleed. A chorus of cries arose from the class as the writer went to the rescue—" Miss, she didn't mean to do it." The loudest voice was that of the wailing sufferer, exonerating her assailant, who was tearing her petticoat to tie up the wound she had accidentally made.

The arrangement of the respective rooms, and the fact that the children of one group were allowed to work together, whilst those of the other group could not do so, had a great effect on the question of " copying." In the final examination four papers from all those submitted by the Experimental Group had to be discarded because the child had copied from her neighbour ; in the Control Group 54 had to be discounted. This was not due to these children having greater facilities for copying owing to their close seating during the examination. Both groups were given the mental arithmetic test in the same room and at the same time. The two groups were mixed. Twelve of the Control Group copied on this occasion, while none of the Experimental Group did so.

It is most evident, from these facts, that when children are set to do work which is beyond their capabilities, and are so placed that their neighbour's paper is plainly to be read, they will tend to copy rather than have nothing to show up. Theoretically they know that this is not right, but the starved self-regarding sentiment staves off inferiority feeling by cheating—and who dare blame them ?

The general impression given by the Experimental Group was that it was truly a community—united in work, and composed of happy, self-respecting young people, each doing that of which she was capable, and each most kindly disposed to her fellows.

GENERAL CONCLUSIONS.

The Experimental Method, though only tried for a year, was justified. Individual work in the three key subjects of Reading, Writing, and Arithmetic ensured that the children were so grounded, according to their capacities, in those subjects that they had some real foundation upon which to erect an edifice of later knowledge. The intelligent children went ahead more quickly than those kept back by the demands of slower class-mates, the more backward children escaped that feeling of hopeless inferiority which is engendered by sitting day after day and seeing the others understand what is being done while they can comprehend nothing, until at last they give up trying. Wide reading, much physical self-expression, much oral composition, and great opportunity for conversation enabled the children of the Experimental Group to develop such capacities as they possessed to a greater extent than those in the Control Group could manage. Their horizons were enlarged by the greater scope given them, their work interested them as being intimately related to their needs and expressive of that which they could comprehend in seeing, handling, making, and doing.

Finally, the free intercourse permitted between child and child engendered a good social spirit, and the constant demands made for self-sacrifice and for the assistance of the weaker did not remain unanswered.

The Teaching of Science and the Training of Science Teachers.

BY A. PINSENT.

To raise the question of science teaching again after the controversies of the nineteenth century may seem like argument for argument's sake. Science is now generally admitted to a place in the curriculum, and the methods of teaching it would appear to have reached a stage of comparative stability. Yet the present period in our educational history seems pregnant with developments which will force a reconsideration of aims and methods.

The condition of the subject, heuristic methods notwithstanding, is far from satisfactory. One can visit selected schools where one is astonished and delighted by the vitality of the work done even in difficult working conditions. At the same time an acquaintance with unselected schools is apt to prove the reverse of exhilarating. In the primary schools as a whole, the science teaching and equipment are either non-existent or are sketchy in the extreme. In the secondary schools the teaching is often thorough and methodical, but seems lacking in vitality. One might describe the treatment as academic. Both content and method are dominated by the examination, and the teaching is measured by credits and distinctions in a school-leaving certificate. Further, the rapid development of the "central" or "modern" school raises the problem of aims acutely. There is a tendency for the central school once established to approximate in aims and methods to the traditional municipal secondary school, or to the modern side of the grammar school. Many educationists deplore this tendency precisely because of the academic atmosphere of the traditional schools, and it is more and more commonly asserted that this atmosphere is not suitable for a considerable proportion of the scholars already in the secondary schools themselves. Then there is the vexed question of rural schools with a "bias," whatever that may mean. Hence the university training departments, together with the Science Faculties, are faced with the necessity of producing teachers capable of entering any one of several different sets of teaching conditions, and this is to be done, if possible, without stereotyping any given individual and thus limiting his opportunities for service. In so far as the training colleges are producing graduate students they are faced by the same problem.

My purpose in this paper is to discuss the preparation of the average science student in the secondary and university science schools and its relation to this problem of the training of science teachers for present-day and probable future conditions.

I think most people are agreed that we need more and not less of scientific temper and outlook in the general population, and it is safe to say that this can only be promoted on an adequate scale by teaching science in the primary schools more thoroughly than it is now taught. Now if one attempts to solve the problem of primary school (or for that matter, central or rural bias school) science teaching, with the prejudices arising out of a university science course and subsequent secondary school teaching technique, one will probably begin by thinking and planning in terms of laboratory equipment, graduate science teachers, and the usual systematic exposition of the principles of a science illustrated by heuristic practice with a neatly graded series of experiments. This solution raises formidable demands for money and teachers, but it is not insuperable on that account.* More important is the question whether this solution would really produce the results desired. The more one considers it from the dual aspect of the needs of the children under sixteen and recent criticisms of science teaching, the more one feels that it would not. The factor of fundamental importance is the outlook, attitude, and capacity of the teachers themselves (no matter from what angle one views the problem). Laboratory accommodation and serviceable equipment are important but not primarily so. An enthusiastic teacher can do good work with a surprisingly small stock of apparatus, together with a fund of ingenuity. Moreover, he will devise his apparatus and apply his knowledge to suit his particular problem. The stereotyped man with a laboratory full of equipment may just as easily make his particular problem fit his apparatus and his text-book knowledge. In the future the schools of all types will depend increasingly upon the products of the secondary schools and universities for their supply of science teachers. These teachers will have been selected by the secondary school system and they will have therefore more than an average amount of whatever excellence or defect that system tends to produce. The secondary school preparation is prolonged and intensified by the university science courses, and it seems desirable to inquire how far the whole process is likely to produce teachers capable of carrying out a reformed programme, fit to face the alternatives presented by the present day fluid school conditions, and favourably disposed toward, rather than prejudiced against, a reform.

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*According to a recent Press report the City of Sheffield Education Committee propose to establish laboratories in their primary schools.

What is the substance of recent criticism? The growing dissatisfaction with school science has crystallized, as it were, since the war period in a few noteworthy events. I will suggest three of these as representative of modern opinion: The publication of the report of the Prime Minister's Committee in 1918*; the new issue by the Board of Education of the Handbook of Suggestions for Teachers, 1927; and the dramatic advertisement for a first-class scientist to investigate the technique of science teaching, particularly for junior pupils, (in the absence of pedagogical prejudices about it) which has issued from the Malting House School, Cambridge. As a preliminary, before considering the events I have just noted, it seems a platitude to insist that it is not the function of the school science course to produce specialists in pure and applied science. The effective duration of the average course is too short for the systematic exposition of the principles of even one science in detail. A large proportion of the pupils leaving school at fourteen, fifteen, or sixteen proceed to occupations in which science is very indirectly represented by some or other of its applications. An exceedingly small proportion of all the children leaving the schools of the country will take up scientific work either as specialist researchers or as teachers. It seems unreasonable therefore that any type of training which may produce specialist university students should be allowed unduly to influence the treatment of the majority of the school population. It may be urged against the orthodox secondary school science course that "it is uniform in type and leads to an examination which is in its main features a university matriculation test. An analysis of the examination results obtained by children leaving secondary schools at the age of sixteen or later shows that only rather more than one half of them reach before leaving the form from which this examination is taken, and that only rather more than one-third succeed in passing it. Enquiry into the subsequent careers of ex-secondary school pupils shows that on leaving the secondary school only about 5 per cent. proceed to universities and about 5 per cent. to non-university training colleges. Most of the remaining 90 per cent. go into commercial or industrial life or (as in the case of the girls) remain at home."†

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*Natural Science in Education.

†Report of the West Riding of Yorkshire Education Committee on "Alternative Courses in Secondary Schools," 1927.

Now let us consider the opinions of the authors of the Suggestions for Teachers, and of the 1918 Report :

" The main purpose of the teaching should be—

(1) The awakening of interest in plant and animal life and in natural scenery ;

(2) The simple investigation of common phenomena and the broad scientific principles underlying them.

" Teachers who keep these aims in view will be able to lead the children to understand something of the simpler rules of health, and of the service of science to the community, and at the same time to awaken an appreciation of the beauties of nature. Most children enjoy the handling of apparatus and observation of the way it works, and many in addition wish to design and improvise. The science lesson gives opportunity to satisfy these very natural inclinations."*

It is worth noting in passing as significant of the change in present-day attitude that there is no specific mention of training in these suggestions. The aims are left in terms of interest, enjoyment, and knowledge of broad scientific principles and their more familiar applications.

The 1918 Report, discussing the science course for children, 12 to 16, suggests that :

" a general course in science should fulfil two functions—

(*a*) It should train the mind of a student to reason about things he has observed for himself, and develop his powers of weighing and interpreting evidence.

(*b*) It should make him acquainted with the broad outlines of great scientific principles, with the way in which these principles are exemplified in familiar phenomena, and with their application to the service of man."†

Although the report lays some stress on " training " it goes on to say that " the evidence we have received shows that there is a tendency to over-emphasize the first of these functions and to neglect unduly the second . . . the importance of both objects should be recognized "‡ ; and further, " the course should give special attention to those natural phenomena which are matters of everyday experience, in fine, the science taught in it should be kept as closely connected with human interests as possible. The keen interest which many boys feel at this age in the applications of science such as aeroplanes, steam engines, wireless telegraphy, motor

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*Handbook of Suggestions for Teachers, 1927. Chap. vi, pp. 218-219.
†Natural Science in Education, paragraph 46, p. 58.
‡Report, paragraph 46, p. 59.

cars, and the like, should be utilized to the fullest extent. There are great advantages in introducing the study of the principles of science by starting from a machine or a striking physical phenomenon and working backwards to the principle, rather than by starting from the abstract and proceeding to the concrete."* The inclusion of practical examples of the bearing of scientific invention on industrial progress in connection with farming and local industries, methods of transport by land, sea, and air; means of communication by signalling, telegraphy, telephones; methods of lighting; is again urged in another part of the report.†

Thus we find that in these two authoritative statements the main emphasis is placed on interest, enjoyment, knowledge of nature, and of the familiar applications of science. The point of view here represented is shown in practical detail in the attempts to establish alternative courses such as those already introduced into some schools of the West Riding of Yorks.

There is therefore a growing body of opinion in favour of a wider and freer conception of school science. We desire not only that science shall mean more than just a skeleton of physics and chemistry, but that all the subjects included shall be treated in a less formal and more humane manner, giving full weight to the realization that we are dealing with an important aspect of the life and thought of mankind. We need less of the formal grammar of the sciences and more of the history, literature, and romance of science. This does not mean that we must neglect the "training" factor. To this we may now turn. What is meant by a scientific training? The term is usually taken for granted, but actually it has so many associations gathered from historical, educational, and psychological controversies that it is very difficult to put a precise meaning to it. It is very desirable at this stage to endeavour to explicate the meaning of "training" in terms of the known facts about mental development. The term has been given a modern setting in the Malting House School advertisement noted above. As I understand it the gist of the statement seems to be this. Freed from pedagogical associations a process of training implies the conservation of hereditary factors in the living creature, and their organization into co-ordinated systems through the appropriate exercise of their functions, and their development by this exercise until they function at the maximum degree of efficiency. The end-products of scientific training would appear to be :

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*Report, paragraph 47, p. 60. For a detailed and forceful exposition of a similar point of view see the article by Prof. T. P. Nunn in "The New Teaching," chap. v, p. 154.

†Paragraph 63, sections E.F., p. 77.

(*a*) Specific skills or abilities, e.g., ability to observe and measure accurately ; skill in the use and design of apparatus for experimental purposes ; ability to reason correctly about facts obtained by observation and experiment.

(*b*) Attitudes, e.g., "intellectual aggression toward the unknown" ; "readiness to tolerate fact"* These attitudes appear to be derived from the interplay of hereditary emotional factors contained within the groups we call curiosity, pugnacity, etc., which constitute the dynamic or "drive" of the individual, and acquired intellectual factors depending on experience, which provide direction for the drives.

The authors of this interesting pronouncement ascribe the highest value amongst the products of a scientific training to the "idea of discovery." "The learning of how to learn, and a scientific scrutiny of familiar things, an attitude of intellectual curiosity and intellectual aggression toward the unknown require to be preceded by the discovery of the idea of discovery." By the "idea of discovery" I suppose is meant the realization that natural phenomena proceed as if they were regulated by rule or law, and that the rules or laws are there to be discovered and can be discovered by people with sufficient patience who know how to look in the correct way. The object of training must be to conserve the maximum amount of hereditary equipment, particularly "drive," and convert it into controllable instruments of thought ; to establish the habit patterns underlying permanent scientific attitudes. The problem of method in science teaching is the problem of devising a technique for doing this. It would seem that we have not yet got very far on the way to solving this problem.

Involved in the meaning of training there is a universal element which may be opposed in thought to specific facts and laws constituting the content or knowledge of a science. This separation is the danger point in discussions about training. It has been too lightly assumed that the separation between logical structure, i.e., the universal aspect of experience, and the facts of experience can be complete. This is the assumption which seems to have led to that divorce between form and content which has drained the life out of so much school work. It is significant that in the more modern versions of the meaning of training so much importance is attributed

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*See *Brit. Jnl. Psych.*, Vol. XVIII, flyleaf.

to the drives, or, as the Herbartians would say, interests. It is difficult to conceive an interest or an interested individual without an interest in something. Hence we arrive by another route at the importance of things and processes in the immediate environment which are inherently attractive to the children undergoing training. This emphasis on the dynamic, whether we call it drive, intellectual aggression, curiosity, interest, or what not, is rather like emphasizing the obvious. The history of science is a history of discovery. The characteristic of the scientist is an intense and critical curiosity, and an aggression in the search for knowledge which has led to painful results in the lives of some of the pioneers. The specific skills upon which the schools have placed too much importance are subsidiary, for without the motives the skills are not applied to any useful purpose.

We have now by implication reduced the problem of training science teachers to this : how can we produce men and women who have discovered the idea of discovery, who have the intellectual aggression, toleration of fact, critical curiosity desired, and send them into the various types of school, prepared to induce similar attitudes in the generality of their pupils with the means at their disposal in a specific locality ?

This problem intimately concerns the training departments and the training colleges. It is obvious, however, that we cannot consider it apart from the effects of the secondary school and university science course upon the raw material of the teaching profession. I want now to discuss some of these effects. It is convenient for the purpose of argument to take the scope of the science first and then pass to the aims and methods of the teaching.

Secondary school science consists almost entirely of either physics or chemistry, or some combination of both for boys ; descriptive botany with a minimum of chemistry and sometimes a little physics for girls.*

In some boys' schools at the present time the specialization is so narrow that it is possible for a student to reach distinction standard in chemistry having only a negligible knowledge of physics ("not knowing the difference between a volt and an ohm," as I heard one student put it). These pupils pass to the university, and there continue their studies in chemistry, taking up a minimum of physics and mathematics on the way. Students of physics and mathematics can proceed to honours degrees in their subjects in some

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*See the 1918 Report, p. 11, para. 8 (2) ; p. 17, para. 11 (vi) ; p. 39, para. 27 ; p. 53, para. 41 (*a*) ; p. 55, para. 42 (*b*).

cases at least, taking only physics and mathematics courses in the process. Of biology, of the broad general principles of science, many if not most of those who will be the teachers of the next generation know next to nothing. Some bits of this knowledge may have been picked up in the school geography course, but usually with the curious implication that what is not acquired in a science laboratory is not really science at all. The content of the present day science courses has been determined largely by historical accident. Physics, chemistry, and descriptive botany were the first subjects to achieve a logical structure and exact experimental technique. They were therefore considered by the formalists as suitable for training purposes. In addition they were comparatively easy to organize for practical work when that sort of activity became educationally fashionable, and they provide admirable media for drill in exact " scientific " manipulation, e.g., weighing to .001 of a gramme. Knowledge in these subjects was more certain, less a matter of controversy. They, therefore, inspired more confidence, and it was easier to set and mark questions about them. Incidentally they were safe. They were not liable to introduce any unduly disturbing details about evolution or reproduction.

This restricted syllabus is out of touch with the life and the interests of the majority of the pupils who will not become specialists. It has little direct value. A knowledge of some branches of chemistry might be valuable to a girl who will become a housewife and who will need to prepare food and superintend the diet of a family. But this part of the subject is chemically rather difficult and relatively unsystematic, and is not usually included in the school text-books. It is hardly suitable for academic and examination purposes. Many girls are taught descriptive botany with its logical systems of classification and its horrific terminology (how valuable for memory training !) and in actual practice the man of the house does the gardening. The syllabus is valuable to the small proportion who are proceeding to the university via the examination. Yet if one suggests that the subjects are kept in their present form just because they are useful to the school prestige for credits and distinctions in the leaving certificate one is denounced as an unregenerate philistine. Why then are they maintained in their present form ? The real reason is probably inertia ; the inertia of bricks and mortar and a supply of apparatus on the one hand, and the inertia of a system of knowledge and an academic organization on the other. This reason is somewhat unsatisfactory as a theory of education, so it is " rationalized," as the psycho-analysts would say. The rationalization is the theory of formal training and transfer of ability. The restricted content and treatment of the course is implicitly or explicitly excused on the ground that the training to be obtained in the school course is transferable to the situations of modern life, even if there is very little direct connection between these situations and the content of the subject and the method of the teaching. Now if the training is to have any value it must produce :

(*a*) Permanent attitudes which will persist and influence the pupils after they have left the school and passed into the situations of the ordinary work-a-day world as we know it at the present time ;

(*b*) Modifications of the child's abilities such that the precision of observation, vigour of reasoning (and whatever other abilities come within the scope of a scientific training) will be available without undue loss of efficiency for dealing with the multifarious situations in commerce and industry in which the adolescent will find himself.

Unless this extended range is granted one fails to see the point of teaching subjects for their training value. The average man needs what scientific abilities he can get far more for the solution of problems of everyday psychology, business economics, and probability, than of physics and chemistry. Now with regard to the first condition it seems reasonably certain, educational theory apart, that the adolescent will adopt a favourable attitude toward science and scientific method after school only so far as he has been interested in scientific knowledge and has found enjoyment in scientific pursuits while at school. For this to happen the subject matter must be closely in touch with the child's natural interests and provide expression for his drives. In other words it must be intimately connected with his immediate environment and he must realize the value of possible applications of the knowledge and skill to be gained.

With regard to the second condition, whether it can be realized or not is entirely a matter of available experimental evidence. It has too often been assumed on the basis of some *a priori* theory of the mind that transfer of ability of the sort demanded here is inevitable. Yet not only does there appear to be no foundation for the basic theory of the mind involved, there seems to be not a shred of reliable evidence to show that any effective transfer of ability such as is required to excuse the content of the courses concerned actually takes place. All the evidence which has successfully survived criticism so far is in favour of the conclusion that abilities developed by practice in a given type of situation will transfer to a short range only of situations of a very similar kind. It is not denied that there are what we call wise or sagacious people who seem to be able to deal successfully with a very wide range of apparently different situations. It is probable, however, that the characteristic we call sagacity is the result of a direct experience with a large and varied range of real life situations which have been analysed and subsumed under broad generalizations. But this type of activity leading to broad generalizations is just what the science courses of the orthodox school lacks.* Hence on psychological grounds we must conclude that the science teaching must find its justification in terms of interest, enjoyment, direct knowledge, and direct effects of training. It would seem that if the knowledge and ability gained in the school course is to be available for the better understanding of out-of-school situations such knowledge and ability can only be gained in direct contact with situations of a similar type to those which must afterwards be analysed and understood. This is equivalent to saying that the child must be brought into contact not with the restricted range of situations within the scope of one or two subjects, but with a range as far as possible representative of the total environment. If the environment in which the child must live includes physiological and biological problems then the science course to be adequate must include some biological teaching. From our particular point of view the arguments against a restricted science course apply with even greater force to the case of the prospective teachers, and it is a necessary condition for the success of a reformed programme that we set about a reform of the preparation of the teachers.

What of the direct training effects of the orthodox science schools? It does not follow that because the indirect training effects have been, to say the least, grossly over-rated in their influence on the majority of the pupils there have been no direct effects upon the comparative few who continue their academic studies in the schools of the universities. What sort of attitudes and abilities are likely to be fostered in the future specialists? Taking any one subject, generally it is taught with the view of passing some selected pupils through an examination "which is in its main features a university matriculation test." Therefore, from the earliest possible opportunity the science is studied definitely as physics, chemistry, botany, etc. The subjects are taught in special laboratories equipped for the purpose and the pupil from his first introduction to the subject gains his practical experience and learns his principles in an

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*See Report, para. 41 (*a*), p. 53.

atmosphere of physics, chemistry, etc. There will arise a strong association in the pupil between, say, physics and a special place and atmosphere in which something called physics is taught. There is a strong tendency for this association to act as a limiting mental set restricting physics and its applications to anything learned in this specific place and atmosphere. A piece of physical apparatus which seems thoroughly familiar and " at home " in its habitual setting in the physics laboratory can appear strange and a little repugnant in surroundings usually associated with chemistry. It has the air of an interloper and seems to suggest that somebody has made a mistake. These associations acting as they do as directive and limiting sets must be taken into account as part of the direct effects of the training.

Again, the teacher has a prescribed syllabus continually before his mind also acting as a selective device. The problems included for investigation in the laboratory will be indicated by the syllabus, and often dominated to a marked degree by the text-book fashionable in the school. The problems discussed need not at all arise in the minds of the pupils as the result of their own needs or of their own reactions to the environment, nor need they feel any particular desire for their solution apart from an academic interest in getting a job done and eventually passing the examination. This desire is only too often for the satisfaction of putting the finished work aside in the hope that it is never likely to be needed again. The experiments are worked out by means of apparatus designed for the purpose by the teacher or the experts upon whom the latter depends for guidance. It will be argued that most teachers do attempt to connect up a principle to be learned with everyday happenings in which it is exemplified. No elementary course in heat is complete without the gaps between the rails on a railway track. Yet these examples are usually more for the sake of the principle than the example. They are a teaching device to assist the child to understand a principle which is introduced first. The academic interest in the example stops when it has fulfilled its expository function. Moreover, the wise teacher who knows his business will use examples most likely to figure in some subsequent full-dress examination. He is not to be blamed for doing this. He is asking for possible failure and personal unpleasantness if he does not follow this method. The school system puts a much heavier premium on this method than on any other.

The pupil then takes an examination. He sits down to attempt some specific paper. Here is another directive set. He has been trained to suspect that there is some physical or chemical principle disguised in each question. It will be one of a restricted system indicated by the title of the paper and he will recall a memorized system of knowledge indicated by these directive factors. If he is sufficiently well drilled he will " spot " the appropriate principle and answer the question.

Apparently the most effective training is that in answering examination questions. Underlying this is a habit of approaching any given problem with the expectation of some indication of the sort of problem it must be and a prejudice concerning the sort of answer which is appropriate. Actual scientific problems and difficulties of everyday life do not always conform to these conditions. Historically, every scientific investigation has arisen from some practical difficulty or some unusual phenomenon connected with the needs of existence. The direction of thought is from crude unanalysed situations to laws and principles invented and elaborated afterwards for the purpose of controlling the environment. An explanatory and controlling function is all that the principles are good for. So soon as they cease to perform these functions effectively they are discarded for better ones. " Pure science " ends with the invention of the appropriate principle which is the most difficult part of the whole process. When the principle is discovered (or invented) the subsequent applications of it are comparatively obvious. On the other hand school science taught for examination purposes accepts a system of principles which are interpreted by a number of illustrative examples, and memorized. The school laboratory methods may quite easily, and I think often do, cultivate habits of thought in the opposite direction to that necessary for discovery and even a scientific attitude to the environment. It is a good psychological rule that habits should be cultivated in the direction in which they will afterwards function. There is much to be said for the suggestion of the 1918 Report that " there are great advantages in introducing the study of the principles of science by starting from a machine or a striking physical phenomenon, and working backwards to a principle." By going the other way from principles accepted as proved, to examples, we cannot help but foster the attitude that the principle is immutable and eternal, and that the facts exist for the sake of it. This attitude may possibly be sound in theology or idealistic philosophy, but it is most certainly contrary to the spirit of modern science.

There is another possible effect of the orthodox school training which is likely to afflict the specialists most powerfully. It seems to be evident in the attitudes even of scientists of repute. This is what might be called subject prejudice. Real problems are often indefinite or unlabelled. It is by no means certain at the outset which system of principles, physics, chemistry, physiology, etc., or several of these together, or possibly none at all, will provide the most effective solution. To decide the best line of attack is the most difficult matter. It is an essential condition for success that the opening investigations which tend to shape the course of subsequent work should be approached with open minds. The history of nineteenth-century science seems to show that investigators with a trace of pugnacity in their make-up may decide beforehand that a given problem must be a question of physics, chemistry, physiology, or mathematics, and then proceed to find these particular principles in the facts.*

What of the university courses? What is liable to happen to the intending science teacher after leaving the secondary school? Many university courses have been, and I suspect still are for the pass men at least, intensifications of the school course. The pass man does little or no research work. He spends his time in learning the principles of his subject, practising methods of manipulation, and passing the degree examinations. The honours man usually does some research. Yet this more often than not is spade work for a professor or lecturer who is the real investigator and who suggests the problem. The work is done in connection with a labelled problem very often extremely restricted in scope. A research man may spend a post-graduate year in the investigation of methods of separating two very similar types of organic acids from a solution of both in some given solvent. These specific technical investigations may have a high theoretical interest and importance, and a high value for the specialist who is intended for a works laboratory. It is difficult, however, to appreciate their importance for the student who is intending to teach the science of the reformed programme to children in several possible varieties of school conditions who will never be science specialists, and who need to get understanding of broad principles and enjoyment out of the science course rather than the dry bones of formulæ and laboratory manipulation. Both pass and honours men in the university schools of natural science pursue their science in the spirit and by the methods dominated by the theoretical needs of a systematized subject. This may produce men capable of becoming research scientists and lecturers in their subject.* It may produce teachers capable of training higher certificate specialists who will proceed to honours courses in the universities, and in turn become specialists. It is not so clear that it will produce teachers capable of giving the wide knowledge of nature and the broad survey of scientific principles desired in the general population (not to mention the intellectual aggression to the unknown).

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*Psychology appears to be an excellent example. The present chaotic condition of psychology may be due to the inability of the exponents of the various schools to realize that there may be psychological as well as physical, chemical, or physiological methods of approach.

I do not wish to suggest in these criticisms that no schools are teaching science in a scientific way; or that the science teachers wilfully offend the canons of good teaching. I am concerned here with the possible and probable effects of a school system as we find it in actual practice, and there seems to me no doubt that the present school system does tend to produce the effects I have noted, and that it provides the strongest possible motives for science teachers to conform to the orthodox. It seems a futile process to try to inspire science students with some enthusiasm for real science teaching knowing at the same time that probably in a year or two they will be grinding mildly interested boys and girls for some matriculation test, and that their teaching will be judged mainly by the number of passes the pupils obtain.

In this connection one meets again the argument of transfer of training in one or other of its variants. It is suggested that university specialists will be able to apply their scientific knowledge and training to any set of school conditions and to any school problem within their purview even if it does involve dealing with a syllabus including some biology, evolution, or history of science. It seems only reasonable to assume that the effects of training in one subject should transfer to new aspects of the same subject, or to allied subjects. Yet experimental investigation makes even this range of transfer doubtful, or to say the least, not necessary. Tests made with mature and intelligent students of educational psychology in an American university seem to indicate that there is no guarantee of transfer of effects of practice from one type of illustrative material to another type within the same subject.† The most important factor in the problem of the teacher in this connection is the inclination to attempt something relatively unfamiliar. Those who suggest that the student trained in some given science subject should on that account be able to turn his attention successfully to the teaching of other sciences or other branches of the same science implicitly assume that he will desire to do so. It is much more likely that he will desire to use the knowledge and the methods he has already mastered, and in which he feels confidence, and that he will just as strongly desire

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*Though Sir William Bragg has publicly expressed his doubts about this. See report of speech in the *Manchester Guardian*, Wednesday, December 14th, 1927.

†See *J. Educ. Psych.*, Vol. XVIII, October, 1927, p. 433. It would be interesting to repeat similar experiments with material taken from natural science courses.

to avoid excursions into new and unfamiliar regions where he must find his own way in the absence of his usual sources of help, feeling all the time somewhat ill at ease. It is only the exceptional man who considers his science and his methods in their relation to specific problems of child and place, who will turn aside and embark on new lines of reading and enquiry. The 1918 Report significantly states that both in England and Wales when liberty in handling the subject is offered, " it is noticeable that though the schools have the right of submitting alternative schemes they rarely avail themselves of the privilege."* There seems to be no more reason why men trained exclusively on one branch of science should desire to include other branches with which they are not familiar in the curriculum than classical masters who know little academically beyond Latin and Greek should welcome science.

It is easier to suspect a disease than to prescribe and put into operation a satisfactory remedy. Our purpose has been to consider the preparation of science teachers in the light of recent criticism of the orthodox school science. Possibly by summarizing the difficulties we may suggest remedies. The scope and content of the school course is not wide enough to bring the pupil into effective relation with his environment. There is too much attention given to academic preparation for examinations and too little to interest, enjoyment, personal taste and bent in the individual pupils. The school system provides teachers with powerful motives for conforming to methods which are scientifically and educationally unsound, but which will produce credits and distinctions in a matriculation test. There is a tendency for the university schools to produce attitudes of mind favourable to specialist research in the direction of the development of a specific theory, while what is more important for the teacher is knowledge of the history of discovery and a sympathetic but critical attitude to wider problems of scientific method and their relation to psychological development and material progress.

It is agreed that most if not all of the *professional* preparation of the teacher is the task of the training department or the training college. Yet the training of prospective science teachers cannot be encompassed entirely in the professional courses. The university science faculties will doubtless hold up their collective hands in pious horror and exclaim that they are not concerned with the training of teachers. Nevertheless they are shaping the attitudes and making the habits which their students will bring into the professional training year, and their influence cannot be neglected. It is inseparable from the main problem. I will venture to suggest therefore that consideration should be given to the following points both in the secondary and university science schools :

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*See para. 69, p. 84.

> The content of the courses must be widened to include biological as well as physical science at least as far as the higher certificate stage.
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> The whole system of examinations with its tyrannous influence upon secondary school methods needs overhauling. The school system ought to provide more powerful motives for good teaching and elasticity of treatment than for rigid orthodoxy and mere drill.
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> Intending teachers during their university (or training college) course should—
>
> (*a*) Be introduced to some research ;
>
> (*b*) Be required to read a good deal more than they appear to do at present about the history of discovery and the development of scientific method ;
>
> (*c*) Be introduced by lectures and discussions to a consideration of wider questions of general scientific method and thus gain some idea at least of the fundamental assumptions of their own subjects, of the relations of these to other sciences, and of the impact of science upon non-scientific systems of thought.

This treatment might produce less finished technicians, but it might produce better and more adaptable teachers of science, able and willing to set about a reformed programme whenever they found the opportunity.

American Education and American Life.

BY HELEN M. WODEHOUSE.

I.

" AMERICA is a new nation," we say often enough on both sides of the Atlantic. But until last year, when an exchange of posts gave me seven months on the other side, I had not realized how far the significance of the saying went. I had not understood the extent of the facts which have to be interpreted in the light of this deeper fact—that America is, and keenly feels itself to be, a new nation in process of making itself.

It is only within the last few years, as one knew in the abstract, that the river of immigrants has been held back by law ; and one third of the people in the country have not yet spent one generation on American soil. One third of America has to be made from these ; whether it means, as a woman put it to me, " the imposing of Anglo-Saxon ideals on all these Italians and Poles and Czecho-Slovaks," or whether it means the initiation of inheritors of manifold ideals into a truly co-operative task of making the New World. There results incidentally a notable turn of language, in that " American " becomes a moral and educational term. Its implications, of course, will vary with the speaker—one writer lays down that " Not the least of American principles are freedom of thought and speech, and the right of the people to criticize and alter, even abolish, their form of government," while another says to his readers, " You cannot be against the capitalistic system and stand for America. . . . You cannot indeed be a good American, in the sense of being loyal to American traditions, unless you are proud of the capitalistic system."* But the word, whatever its implications, will stand for an ideal. Looking through a syllabus of University lectures on educational principles, I noticed that where an Englishman might sum up his favourite ideas as " the modern spirit in education," this author said " the American spirit " ; and that presently he had two columns distinguishing old and new :

Scholastic—looking backward into authorities.	Pragmatic—looking forward into outcome.
Training of separate faculties.	Organization of character.
Subject-centred scheme of schooling.	Child-centred scheme of schooling.
Following tradition or precedent.	Scientific.
Autocratic.	Democratic.
Aristocratic.	Plebeian.
Emphasis of particular qualities of persons.	Respect for personality.
Pagan.	Christian.
Bent on pleasure.	Bent on kindness.
Bent on power through wealth.	Bent on service.
Provincial.	Believing in brotherhood.

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* " The Metropolitan," quoted in London *Nation*, February 21st, 1920.

And the first of these columns was headed "Made in Europe," the second "Made in America."

II.

If one side of a nation's self-shaping is vigour of action, another side may be the forbidding of action. A woman fellow-traveller asked me in the tone that expects an affirmative answer, "Do you find the people have more freedom here than in England?" I hesitated for a moment, and she added rather sharply, "Well, of course, there must be a limit to all freedom, mustn't there—if people misuse their freedom they can't have it."

So we find occurrences like the following. Visiting an elementary school, I became involved with a geography class and was put up to tell them about Bristol. I was in the midst of describing the Bristol tobacco trade, and the magnificent gifts which my University had received from that source, when I remembered that the head master, who stood listening, had told me a fortnight before of the law which forbade mention of tobacco on any poster within (I think) half a mile of a school. The same head master described to me with unquestioning approval the benevolent despotism of Henry Ford. Agents, he said, go into the workmen's houses in Detroit to see how their wages are spent, and one agent reported that a workman's wife had acquired a diamond ring. The great employer sent for the husband, who explained that the ring had been the fulfilment of a dream of years; and Ford said, "All right." I do not vouch for the story, but my informant's point in telling it was admiration, both for Ford's humane understanding and indulgence, and for his parental care.

But now, what comparison shall our own profession make of the freedom of the people in America and in England?

When I visited the High School in Iowa City, I was introduced to an English lad in the top form. This boy had been born in a Dorsetshire village, and left the village school to go to work. His father died, and he came to America to join a married sister. Presently he concluded that it was no good living in America without an education, so at seventeen he entered the free high school, working in a family for his board and lodging. Now at twenty-one he was about to leave, and next term he would enter the State University. He tells all the boys at home what chances there are in America, and when he has finished his university course he will send for his mother to come and live with him.

In the United States, taken as a whole, more than half the children who leave the elementary school go on to enter the secondary ; in England, as we know, it is less than one in ten. Of their fifteen-year-old boys and girls 74 per cent. attend a day school ; it is 16 per cent. in England. But when we have allowed for the backward south and the backward rural districts, the figures for the towns of the north and west must be very much higher. In the little towns of Iowa, wherever I was able to compare the population with the numbers in the high school, it seemed that among the available young people from fourteen to eighteen quite four-fifths must be attending. A little place which would be pleased here if it had a hundred pupils in its secondary school will there have seven hundred. The great increase has taken place in the last thirty-five years ; between 1890 and 1918 it is said that a new public high school was established every school day. America (outside the south) is setting out to make an educated nation on a scale unparalleled in the history of the world. Every weakness that we think we see in the process and the product must be judged in the light of the task she is attempting.

III.

America has, and knows well that she has, two different kinds of weakness in her national schools. One kind comes from the points in which she is behind us on the path of history, the other kind from the points in which she is ahead.

The first kind can be illustrated from the rural school, which, on the average, is definitely worse than our own. The schools are too small because the country is still so empty ; Iowa has nearly ten thousand schools with an average attendance of twenty, and something like a third of all American pupils are enrolled in schools with one room and one teacher. The administrative areas are too small, like our own in the days of School Boards, without our own amelioration of substantial national grants and national control. The report of a State Superintendent of Schools describes the system as " the purest form of democratic government." " The school is the center of community life because it is an institution organized and operated for the boys and girls from every home in the community. The group of neighbours residing in a district determine the kind of school they can afford to support and it becomes their school." But an ex-country teacher in my class, fond as she had been of the work, knew the system from the under side. Teaching was a small part of the work, she said ; the country teacher must do her own school-cleaning and fire-lighting, and wash the school towels, unless the Director (an elected unpaid manager) offered to have them done. She has no security for re-appointment at the end of the school year, for the Director is apt to have somewhere a friend that he wants to help, and there is no N.U.T. to be interested in dismissal without cause. "You must hustle round at the March elections, or get someone to hustle for you."

Whether in the country or the market-town, moreover, the small areas are likely to involve too great homogeneity in the governing body; and if a group of farmers are shaping their community, it is easy to begin with the teacher. A writer in the New York *Nation** quotes a teacher's contract in force in a Southern school:

> "I promise to take a vital interest in all phases of Sunday School work, donating of my time, service, and money without stint for the uplift and benefit of the community.
>
> "I promise to abstain from all dancing, immodest dressing, and any other conduct unbecoming a teacher and a lady.
>
> "I promise not to go out with any young men, except in so far as it may be necessary to stimulate Sunday School work.
>
> "I promise not to fall in love, to become engaged or secretly married.
>
> "I promise to remain in the dormitory or on the school grounds when not actively engaged in school or church work elsewhere.
>
> "I promise to sleep at least eight hours a night, to eat carefully, and to take every precaution to keep in the best of health and spirits in order that I may be better able to render efficient service to my pupils.
>
> "I promise to remember that I owe a duty to the townspeople who are paying me my wages, that I owe respect to the school board and the superintendent that hired me, and that I shall consider myself at all times the willing servant of the school board and the townspeople, and that I shall co-operate with them to the limit of my ability in any movement aimed at the betterment of the town, the pupils, or the schools."

IV.

The other kind of weakness, however, will be much more fertile for our observation, since it comes from forwardness on the path of history, and the undertaking of a task towards which England at present has taken only the first few cautious steps. On a quite unprecedented scale, this nation is taking responsibility for its young people. No partial failure can make it anything but wonderful to watch ; and when so immense a task is first attempted, we shall inevitably see some partial failure.

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* June 1st, 1927.

Envisage the free high schools, and in their classrooms the thousands upon thousands of boys and girls whose numbers steadily increase year by year. How shall they be classified, and what shall they be taught ? As to classification, the internal machinery, like the external, seems to English ideas to have lagged behind ; a big school with several parallel classes will still often make them up at random, and the intelligence testing and grading which we are apt to associate with American education should really be thought of as an innovation, making its way slowly amongst the mass of schools which grade far less than our own. As to curriculum, the field is open. Except in the East, there are no external examinations to consider ; and the State universities, requiring graduation from high school, are not rigorous in their prescription of subjects to be taken. Traditions are in the melting-pot, and the American public is far more widely aware than the English of the darkest secret of our profession—how very little we yet know of what curriculum is the best for a particular pupil.

In this inevitable period of wide experiment and uncertainty many Americans would admit that they had gone too far in trying to solve the problem by throwing the reins upon the pupils' necks. High school students do not take many subjects at a time (four is a common number), but they may change them frequently, some every year and some even every half-year, and the range of choice in a big city school is immense. " We want things when we want them," remarks a Californian official, " whether it be in school or in life. The live school is the one which satisfies wants." But if even at forty it is often hard to know what one really wants, it may be still harder at fourteen.

Here, moreover, England has an accidental advantage from the very unreasonableness of her educational history. With us, if a child is to learn languages or mathematics or experimental science at all, he usually begins them at eleven or twelve, while he and his companions are still young enough to find joy in showing off their declensions and solving their puzzles and beating each other in a memory race. In America he first finishes the elementary school, and then has these tasks to face at fourteen or fifteen ; a very different affair. Here is a simple explanation enough of the common statement, that American secondary scholars are two years behind our own. Apart from all questions of grading or of method, in the academic subjects the statement is literally true, and other subjects are not so easily measured.

And it may be in the other subjects that the chief American contribution to schooling will finally be made. What struck me most in the schools I saw were the crafts, the orchestral music, and, finally, the social studies. Under many names—modern history, sociology, economics, government, commerce, current problems, social ethics, or surveys of civilization—some very interesting school books are being written and some very interesting work here and there is being done. It may be that the whirlpool of experiment will settle some day into a new synthesis whose centre will be of this kind. Perhaps this is indicated by another epigram in the Californian paper: "Mediums: the honest-to-goodness teachers who bring the psychic entities of Marys and Willies into communication with the great, throbbing, real world of sure-as-you-live."

V.

The school position repeats itself in the universities. Let us look first at specimens of the figures which show what is being attempted.

The population of the United States is about three times that of England and Wales. In 1925 there were about 42,000 students in English and Welsh universities and university colleges. In the same proportion there should be 126,000 in Amercia. Actually there were 660,000.

Many of these, no doubt, were in not very good colleges, so let us look more closely at selected districts. In Great Britain, Scotland has the highest figure, with 10,500 students in a population of something under 5,000,000. California has a population of 4,000,000, and in her three largest universities she has 34,000 students.

The State of Iowa has an area nearly equal to England and Wales, but the population is about the same as that of our five south-western counties. In 1925 these counties contained in Bristol University 915 students; in Exeter University College, 391. With a generous estimate of the west-country students in other universities we might bring the total to 1900. In the previous year in Iowa the State university had 7,000 students; the State College (which is the technical department of the university) had 7,600. There are some twenty-five other colleges in the State, but if we neglect all but the four largest of these we shall reach a total of 19,000.

The same State of Iowa, with its population of our five counties (which is half the population of Lancashire), a State dependent on agriculture, which has gone through a time of great depression for several years past, makes to its university and State college between them, besides all capital grants for building, etc., an annual grant of about £1,500,000.

In Iowa the college students have increased even faster than those in the high schools, but in the country as a whole the proportion is the other way, because many universities are limiting their entry. Hence the urgency of an eastern superintendent of schools, speaking at a conference in 1927. "The college is not meeting the situation and has no plans for meeting it. . . . What I am asking is that those who survive the high school and who desire further training shall have the opportunity for one or more years in college with courses organized and modernized and with definite study and guidance of the individual through his underclass years." The colleges say they cannot do it, he suggests, because they will not give full work to their staffs, and will not make full use of their buildings. "If the plant inefficiency prevalent in our colleges were found in our public schools, our surveyors would create a revolution."

Such is the steadily rising tide that is flowing through the universities, and still beating against their walls. That attractive young man, Charles Lindbergh, was a student for a time in a leading mid-western university; he did not care for it, and left at an early stage without a degree. Other young men afterwards famous have done the same in their college course in England. But our critics have usually waited a hundred years before saying what American journals unhesitatingly said last summer: "What business has a university not to know what to do with a man like Lindbergh?"

VI.

As in the schools, we find difficulties of university government arising from machinery which has not kept pace with the growth of the task laid upon it. More invention is yet needed in shaping governing bodies, if sufficient touch with public needs is not to mean too great dependence on popular control. The difficulty is usually quoted with reference to the State universities, but private universities may equally be affected. I visited a town which had two universities supported by private gifts; one was half as big again as the University of Bristol, the other was smaller. The smaller, through financial difficulties, had almost arrived at the point of being handed over to the larger to be absorbed; which might have worked out quite well. But a month after my visit I saw a newspaper report of a strong revival of interest on the part of the religious denomination which had originally founded the smaller college. The institution had been set financially on its feet again, and the science staff were undergoing a somewhat wholesale dismissal for religious unorthodoxy. Now I would say a word here on the contrast we are disposed to make with England. After Sir Arthur Keith's address to the British Association, there were plenty of letters in English newspapers expressing just the same views as are held by these American Christians; and a Lancashire town not long ago passed a resolution to much the same effect as the famous law of the State of Tennessee. The white population of Tennessee is only about twice that of Glasgow. Magnify the English town into so much area of American soil that it becomes a sovereign State, and we shall have the same results. The comment we should make on the university matter is not, "In America the people who endow universities are like that," but, rather, "In America people like that will endow universities."

In the colleges again, as in the schools, their enormous task has forced the acutest problems of grading and curriculum, and the progress of internal organization is not yet sufficient for the one, nor the progress of research sufficient for the other. "How does their standard of work compare with ours?" I have often been asked since my return; but the question is highly ambiguous. If we are comparing the worst work that will just obtain a B.A. degree in England with the worst that will just obtain one in America, I should say that their worst was worse than ours. If we compare the averages of the whole of the work that is actually done, including that of the graduate schools, then I do not know the answer. But if we take into account the fact that our methods of selection, intellectual and financial, have restricted our number of students to one sixth, or one tenth, of their proportion in the American State, what is it that we ought to ask? Ought I to compare the average work of my Bristol or Birmingham classes with the average work of my classes in Iowa, or should it be with the average of the best tenth in Iowa? If the latter, then I cannot hesitate about my answer at all. I have seldom had the pleasure of teaching better students than the best that I found there.

VII.

The worst work that just passes muster in American schools and colleges (let it be admitted) is likely to be worse than that which just passes in ours, so long as we are comparing the academic subjects in which our examinations are chiefly set. The smaller stress on examinations and the absence of external examiners makes a difference; the difficulty of staffing the high schools with enough and good enough teachers makes a difference; but the latter difficulty is only one result of the fact fundamental to all—the size and the speed of growth of the task that is being undertaken. The nearer a nation comes to educating all its sons and daughters, the more certainly must it reckon with a very wide range of kind and quality in the minds with which the schools must deal, and this means for the present at least (until our skill in methods and curricula has gone much further), and possibly always, that the average of high school work and of undergraduate work is likely to be lowered by the mere force of additions at the bottom of each class. On the other hand, if you choose to restrict your entry sufficiently, by any test that is even partly relevant to gifts and preparation, then you can raise your minimum and your average progressively until they coincide at the top. It is an easy way.

The real sacrifice of quality to quantity, as opposed to the merely statistical sacrifice, would be indicated if there were evidence that the best students were being hindered by the presence of the rest. So far as I can judge, I should say there was some evidence not exactly of hindrance, but of lowering of stimulus during the high school and undergraduate stage; yet nothing so serious that it may not be overcome by such experiments in sorting and grading as are already being initiated (on the lines, for instance, of that distinction between Pass and Honours which England introduced in the last century); and nothing, even at present, so serious that it may not be amply balanced by a moderate allowance of time—an additional two or three years in the scholar's or discoverer's lifetime.

VIII.

But some American and many English critics have spoken as if even the statistical sacrifice indicated waste at least. What have high schools and colleges to do, they ask, with all these thousands upon thousands of ordinary boys and girls? Let the educational system select "first, those who are competent and worthy to cherish the human heritage in learning and to add to it; and, second, those who may be made skilful in appreciating and applying it in the guidance of human affairs"; and, like that of England and France, let America's education winnow out the rest.

The words are those of a distinguished American,* whose brilliant pamphlet strikingly overstates the contrast by means of comparing his country's average not with the English average, but with the English best. But let us consider his proposal on its merits for America; and let us look first for this purpose at a charge which is often brought, not against the boy and girl, but against the grown-up American. It has been brought, for instance, recently by another gifted writer, Dr. André Siegfried, in "America Comes of Age":

> "What is absolutely new about this society which is accomplishing such marvels is that in all its many aspects . . . it is working toward the single goal of production. It is a materialistic society, organized to produce things rather than people, with output set up as a god. . . . Once it is admitted that their conception of society is materialistic in spite of the idealism of its leaders, it is only logical that the doctrine of efficiency should become the central idea of the country. . . . This point of view is not imposed by the upper classes or the Government, but by the great masses of the people themselves. . . ."

I do not wholly agree with Dr. Siegfried's position, but there probably is some truth in a thing so often said. What then, fundamentally, is materialism? Might we interpret it as the mood which lays disproportionate stress on the outward symbol or means or result, as compared with more important realities that are harder to see? It is all a matter of proportion and degree;—few are so austere as to forbid all interest in the outward sign. A schoolboy is allowed to rejoice in winning a game as well as in playing it; the student may keep in view not only the culture but the degree; the professional man may be pleased with reaching the top of his profession, and even the perfect chivalrous knight was permitted to rejoice in glory—in the fame of a wise and valiant man. These outward things confirm us against our own doubts; they reassure us of some work that has been good in its own way. But so far as we become too absorbed in the sign—too single-minded in our immediate aim, with a narrow part of our mind—so far we are materialistic. And the danger is more serious where the sign-system happens to be not very well adjusted to the real value of the work. This is what is happening so far as it is true that American interest in money, for instance, is too great. It is not the interest of a miser; the American who gains a large income will part with it

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*Dr. Learned, in *Bulletin* No. 20 of the Carnegie Foundation.

lavishly, wildly, often magnificently. It is the interest of playing a game, for the impulsive single-minded boy who plays to win; the interest of taking a high degree in the queer confused university of business life; the interest of winning a hundred single combats and taking twenty cities and being known by your peers. And the wreath of victory which habitually pleases oneself is pleasing also for one's country. In England we have sometimes thought of extent of territory as the best sign of success. "Wider still and wider, let thy bounds be set." I have heard that sung with religious reverence in an English school; and with the same religious reverence, in a little Midland American town, the president of the local School Board, welcoming a teachers' conference, told us of the prosperity of America. America, he said, had added to her national income, during the last twelve years, more than the whole income of England and France together. That is, she had gained more wealth in the last twelve years than England and France in a thousand years. And this, he added with a compliment to us, must be largely due to education, for every banker and every business man had his ideals inspired by some school teacher in his youth.

What advice are we to give to America? If the danger, seen by her and ourselves alike, is that of a too narrow, too impulsive single-mindedness, which lets her vigorous boys be swallowed up too quickly and completely in a game not good enough for them, then are we to dissuade her from taking advantage of that other movement, so unprecedented in its extent and its yearly growth, which brings those boys to her first, pausing before they plunge into the game, and saying dumbly, "Can you manage to teach us anything better than this?" Are we to tell her that her high schools and colleges should winnow out all those who are unlikely to contribute to the heritage of learning? (remembering that people who are winnowed out still continue to exist). Or shall we rather encourage her in thinking of the heritage of civilization as a whole; and of men and women (in our own Ruskin's words) as included in a nation's wealth. If so, we may refrain from blaming her too coldly if she stumbles in the vast experiments that her undertaking involves. And if France and England criticize America the owner of factories, because she treats human beings too much as a means towards making things, we may stand ashamed in turn before America the educator, using things as the means towards making human beings. It was not in England that the Dorsetshire boy found the door open into his heritage of learning and of skill.

IX.

" We must be active," said an American woman to me, " because there is so much for us to do. Europeans can take things easily, but we have everything ahead of us." Americans just now see destiny unrolling in front of them ; a world at their feet and a world yet to be made. I found Kipling's Recessional in an American hymn-book. They feel as we felt when we realized we had made an Empire ; as we felt when we fought Napoleon and, incidentally, made ourselves the Makers of Things for all Europe ; as we felt, perhaps, in the days of Elizabeth.

" Our thoughts, a long time after
They think ; our words they say."

It would not seem half so bad if they said it in French.

But in my seven months adventure I often felt moved to seek comparisons further back still. There has been another nation in history, criticized by its neighbours and by itself as over-talkative and changeable, which felt its life so pressing and absorbing and exciting that its higher education turned continually into social study, and they had Business Methods in the junior high school and professorships of Contemporary Thought in the universities in everything but name. They felt keen admiration (with results good and evil) for efficiency, and power, and " things on a scale worth talking about." Their schools had no examinations ; and the oral work outweighed the written ; and they always came to listen to travelling lecturers. They gave an immense amount of time to athletics, and the games and competitions between the youth of the different towns must have encroached terribly on other parts of education. The young men got drunk : a contemporary philosophic work pictures most of the disputants as ending under the table. The towns had bosses and demagogues who played havoc with municipal government ; the nation had queer superstitions and religious revivals, and did not keep its laws very well, and was liable to mob action, and to panics lest its greatest teachers should be departing from the old ways and unsettling the minds of youth. It was not a country satisfied with itself ; it was full of critics and mockers, on the high-brow and the low-brow side alike. And all the time it felt underneath the immense importance of its young people. Give men as hostages if you must, they said ; not boys, for who can tell what may come of a boy ?

If an American city strains its resources to build a temple (an American has truly said) it is a temple for the care of youth ; the city school is likely to be the finest building in the town. As I saw, in place after place, these multitudes of fine boys and girls receiving some kind of decent training; these broad-browed clear-eyed youths, and young girls turning presently into marvellous young wives, I felt that what they write on the world's history may be delayed for a while, but is going to be written. And one might regret it, and resent and resist it, yet hardly wonder at it if, when they thought about England, they thought with mingled respect and pity, liking and indifference, as Greeks used to think about Egypt.

Finally, when we are irritated by aggressive local patriotism we might use imagination on both sides.

I heard a charming American artist describe his educational work with American troops in Europe after the close of the war. Standing with a young soldier by the Loire, in one of the loveliest landscapes of France, he tried to rouse the young man's admiration, but could only get a sigh, and "It's not like Hannibal, Missouri."

When I came back to Bristol I went into a shop near my house, and the lady behind the counter hoped I had enjoyed myself, and was sure I had not found American landscapes better than English. I said I feared that Rocky Mountain landscapes were, at any rate, a little larger than ours. "Ah," she said, "but have you seen the extent of the view above Stroud?"

Some Effects of Age in Selective Examinations.

BY FRANK SANDON.

PART I.

I.—ORIGIN OF THE INVESTIGATION.

An assistant master at a mixed maintained secondary school a few years ago noticed a rather anomalous age distribution of the pupils. Thus, the boys' entries for the athletic sports were classified as follows :

Birthday in	*Aug.-Sept.*	*Oct.-Nov.*	*Dec.-Jan.*	*Feb.-March.*	*April-May.*	*June-July.*
No. of entrants	51	42	38	29	36	24

A preponderance was anticipated of the June-July group, as these boys were expected to enter in larger numbers in scratch races—the races were for year-groups, and ages were to May 31st. The result, however, suggested some other causes at work. A closer examination seemed advisable, and most of the form registers were consulted, with this result :

Birthday in	*Aug.-Sept.*	*Oct.-Nov.*	*Dec.-Jan.*	*Feb.-March.*	*April-May.*	*June-July.*
No. of pupils	119	98	95	67	51	56

The fact seemed established. It exhibited itself both for boys and girls.

Searching for a reason, the enquirer realized that the great majority of the pupils were free placers chosen by an examination where, he learnt, there was no age allowance. Would this explain it ? The examination, so far as it was a good one, would select children of high educational attainments : these might be very bright young ones, or older rather duller ones of more schooling. This possibility is confirmed by the following figures, if we bear in mind that the brighter children will cover the ground of later secondary school work better than the duller ones.

Birthday in		*Aug.-Sept.*	*Oct.-Nov.*	*Dec.-Jan.*	*Feb.-March.*	*April-May.*	*June-July.*
Upper School Divisions	A	7	10	7	7	8	10
	B	15	12	8	5	6	7

The "A" divisions now contain their fair share of pupils of each age; the "B" divisions have accumulated the sediment of duller pupils. (It should be noted that all children enter at the bottom of the school: there are no "supplementary" scholarships nor transfers of higher elementary children.)

It seemed conclusive, therefore, that where there is no age allowance in the scholarship examination injustice is done. The L.E.A. were informed of the result, and the writer was invited to examine their data in this connection for the scholarship examination of 1926.

II.—The Scholarship Candidates.

The Secondary School Entrance Scholarship Examination in question was open to all pupils in elementary schools between the ages of 10 and 12 on 1st August, 1926. There were some 6,000 such children of each year of age, half boys and half girls. Some 70 scholarships were awarded each year to each sex, and perhaps half a dozen of the brightest just short of their eleventh birthday in 1925 were then chosen and were not competing in 1926. The age distribution of the candidates was as follows:

Birthday in		*Aug.-Sept.*	*Oct.-Nov.*	*Dec.-Jan.*	*Feb.-March.*	*April-May.*	*June-July.*	*Total.*
Boys Competing	Age 11	121	111	98	93	79	70	815
	,, 10	61	52	58	38	25	9	
Boys Successful	Age 11	15	12	9	15	7	5	72*
	,, 10	6	1	0	1	1	0	

*Only 70 scholarships were awarded: information is not available how discrimination between boys of the lowest scholarship mark $\left(\frac{149}{200}\right)$ was made.

The same anomalous age distribution is observable here both in number of candidates and in number successful. A further anomaly, a larger number successful with birthdays in February and March, is probably associated with promotions at the end of the elementary school year in April; we shall not discuss it further here.

Since in each of these groups there are some 500 possible candidates, the statistics can be represented :

Boys.	*About* 12 *years of age.*	*About* 11 *years of age.*
Competing ..	One quarter of possible.	One seventh of possible.
Successful ..	12 per cent. of the competitors (=3 per cent. of age group).	7 per cent. of the competitors (=1 per cent. of the age group).

We have no local statistics on the age and sex distribution of the 6,000 children in each year-age-group. General experience, in the absence of any evidence to the contrary, suggests that it is plausible to assume that there are 500 of each sex in any two-month-age-group. There is no evidence that there is any real variation in ability according to the month of birth. As in the previous year presumably the same proportion of ten-year-old boys with birthdays in August and September were successful as in this, boys who had birthdays in these two months had four times the number of chances of winning a scholarship as those with birthdays in June and July. This would be due to : (1) greater mental age ; (2) greater educational attainments.

III.—THE SCHOLARSHIP EXAMINATION.

The examination was in three parts :

Arithmetic Rules	Maximum 30	Total : 200 max.
Arithmetic Problems	,, 70	
English	,, 100	

The papers were of old type and by no means resembled any modern intelligence test. " Honourable Mention " was given to all candidates with over 60 per cent. (120 marks) ; this may have unconsciously caused a distortion of the frequency curve in the neighbourhood of this mark.

Mark	180 –	160 –	140 –	120 –	100 –	80 –	60 –	40 –	20 –	0 –	*Total.*
Frequency ..	3	27	79	121	134	179	162	81	24	5	815
Accumulated Frequency	3	30	109	230	364	543	705	786	810	815	—

The distortion referred to appears in several age groups, as will be seen on referring to the double entry table for age and marks

(Table I) and plotting the histograms. The total effect seems that some 30 or 40 candidates extra obtained above 120 marks than the smoothed curve would lead one to expect : this is analogous to the phenomenon exhibited in the stature curves of conscripts.

The distribution is by no means of the same character at all ages, as can be seen by drawing the mark frequency curves for the different age groups. At the higher ages the mode lies towards higher marks than at lower ages. The tail in the former case is longer towards the low marks, suggesting that the paper was too easy or too short or too leniently marked for the older boys. Since at this age the very brightest boys were skimmed off the previous year and there are far more boys competing than at other ages (and thus we dig deeper into the regions of mediocrity in this case) it follows that a comparison between boys of equal merit of different ages will give even greater differences than we find here at first sight.

IV.—The Age Allowance.

There has been in various quarters a certain amount of discussion of this question. It is, however, not one that can be settled *a priori* ; it should be possible from the data of any particular examination to determine what a fair allowance should be. The great difficulty is that arising from the candidates of any age group being subject to the selection already referred to. Thus, suppose we take as our first method (Method "A") that procedure of calculation which simply uses the average marks at various ages :

Age	10.0 –	10.2 –	10.4 –	10.6 –	10.8 –	10.10 –
Average Mark	88.5	96.0	91.4	82.5	90.5	87.5
Age	11.0 –	11.2 –	11.4 –	11.6 –	11.8 –	11.10 –
Average Mark	94.3	88.5	100.9	106.7	103.3	108.1

There is a general tendency for these to increase with age. If there were no selection these changes could be ascribed to :

(1) Increase in mental age : as the average competitor increases in age from 10 to 12 he has an access of intelligence, the increase as measured by score being roughly linear.

(2) Increase in attainments : as the average competitor stays longer at the primary school, he has an increasing facility in answering schoolwork problems of the kind set in the examination. The higher his standard the more advanced the work he does.

(3) Random fluctuations due to sampling.

Then in this case a best-fitting straight line, through the points representing average mark at different ages, would give at once the increase due to the first two causes alone, and thus the corrections could be obtained.

But there is selection. It operates in several ways.

(4) The brightest boys were removed by success the previous year.

(5) All boys over eleven who wish to have a scholarship must compete this year: the others need not.

(6) All boys who do compete do so in increasing numbers as their age advances.

We can remove the effect of (5) by limiting our investigation to boys of 11+. This gives a smoother change than we otherwise have: the best straight line indicates an increment of about 20 p.a. (from average 87.5 at 10.10 to 108.5 at 11.10). On account, however, of the existence of (4) and (6) this is too low: how much we cannot say by this method. No mathematical analysis of the age-mark table will help us as it does not automatically allow for this selection. We need not therefore consider more elaborate methods such as those requiring use of the regression equation or the line of modes.

We turn next to method "B." If we assume that the candidates competing in any age group are the best of all the members of that age group it follows that we should be able to compare the top 70*, say, of age 11.10 – with the top 70 of age 11.0. Take then the average of the boys of each of these special groups.

Age	10.0 –	10.2 –	10.4 –	10.6 –	10.8 –	10.10 –
Average of Top 70*	—	—	—	—	—	—
Average of Top 40*	—	—	—	94.9	102.2	109.5
Age	11.0 –	11.2 –	11.4 –	11.6 –	11.8 –	11.10 –
Average of Top 70*	94.3	94.6	114.6	121.6	124.7	133.6
Average of Top 40*	116.2	117.2	135.5	136.3	142.1	147.2

*These numbers were chosen as sufficiently big to show the general character of their average member, and sufficiently small to be formed for a fair number of age groups.

On plotting against age the six values that we can get for averages of the best 70 we notice that there is an increase in the average as the age increases. This increase can be represented by a straight line: the best fitting straight line can be drawn approximately by eye: it gives a change over the year (from 11.0 to 12.0) of about 51 marks (say from 95 to 146). Exactly a similar method applied to the best 40 (the figures are given in the last table) gives us

TABLE I.

SECONDARY SCHOLARSHIPS (BOYS), 1926.

FREQUENCY TABLE—TOTAL MARKS IN FINAL EXAMINATION AND AGE

	Age on 1926-8-1	10.0 –	10.2 –	10.4 –	10.6 –	10.8 –	10.10 –	11.0 –	11.2 –	11.4 –	11.6 –	11.8 –	11.10 –	*Total.*
TOTAL MARKS IN EXAMINATION.	180 –	—	—	—	—	—	—	—	—	—	1	—	2	3
	160 –	—	1	—	—	1	2	2	1	5	3	5	7	27
	140 –	—	1	2	1	3	5	4	7	18	9	18	11	79
	120 –	1	3	6	5	6	7	11	12	4	20	15	31	121
	100 –	1	5	6	9	9	7	9	10	14	27	17	20	134
	80 –	5	7	12	12	15	13	22	9	24	18	24	18	179
	60 –	1	7	6	22	8	11	11	23	19	15	19	20	162
	40 –	1	1	4	7	7	10	9	13	7	4	10	8	81
	20 –	—	—	1	2	2	5	2	4	2	1	3	2	24
	0 –	—	—	1	—	1	1	—	—	—	—	—	2	5
	Total Frequency	9	25	38	58	52	61	70	79	93	98	111	121	815

he result of about 42 marks increase in the year (say from 115 at 11.0 to 157 at 12.0). These two suggest a correction about twice as great as before, and of the order 4 marks (or 2 per cent. of maximum) per month.

When, however, we examine the validity of the procedure we note as already pointed out that the frequency distributions for these top seventies are not at all similar : in the case of the best 70 boys of the array 11.0 – we have the whole distribution, tailing off at either end (Table I shows successive frequencies are 2, 4, 11, 9, 22, 11, 9, 2), whilst in the array 11.10 we have roughly only half the distribution (2, 7, 11, 31, 20, omitting 18, 20, 8, 2, 2). It seems very unlikely then that we can compare the marks in this way. The candidates may be the best 70 of their age group, but extra marks are not equally easily obtained throughout the range : we may readily anticipate that a seventy-first candidate in array 11.0 would have had 10 or even more marks less than the seventieth boy of his array, but such a discrepancy in array 11.10 is most unlikely as the values are there near the mode and more densely compacted (actually the next value is only 1 mark less). This difficulty can be obviated to some extent by taking the best 40 instead of the best 70, and considering only the range 11.0 to 11.10, but the population of each array is now getting rather small. We can, however, conclude from the two results of this method that the additional mark appropriate for the age correction appears to be much the same for the best 40 as for the best 70 of each array, in other words, it should be the same for every candidate of any particular array, whatever his actual mark.

It may be noted that other workers on this question (e.g., James : vide page 280) have suggested that the age allowance should be in the form of a bonus of a percentage of *actual* marks, the percentage increasing with age. Our conclusion is that the bonus should be a percentage of *maximum* marks, the percentage increasing with age. Thus a candidate six months below maximum age, with an actual mark of 120 out of a maximum of 200, might receive on the basis of a 1 per cent. per month allowance by the former scheme an extra $\frac{6}{100} \times 120$ or 7.2 marks, and on our scheme an extra $\frac{6}{100} \times 200$ or 12 marks. If two candidates both 10 months below maximum age received actual marks of say 80 and 150 respectively, and the bonus under the former scheme were 1 per cent. p.m., the bonus granted would be different in the two cases, being 8 and 15 respectively. This is not justified by our work : candidates in the best 70 of any

TABLE II.

SECONDARY SCHOLARSHIPS (BOYS), 1926.

TOTAL MARKS AND RANK IN ARRAYS OF AGE GROUP.

	Age on 1926-8-1	10.0 –	10.2 –	10.4 –	10.6 –	10.8 –	10.10 –	11.0 –	11.2 –	11.4 –	11.6 –	11.8 –	11.10 –
RANK.	10	—	101	111	112	120	130	137	132	154	147	154	157
	20	—	72	86	93	97	104	113	121	143	135	142	140
	30	—	—	69	77	85	84	95	100	113	124	134	135
	40	—	—	—	66	70	70	86	77	101	113	116	129
	50	—	—	—	58	38	48	77	68	89	107	108	122
	60	—	—	—	—	—	21	59	62	83	100	97	113
	70	—	—	—	—	—	—	33	54	78	87	88	102
	80	—	—	—	—	—	—	—	—	68	77	78	94
	90	—	—	—	—	—	—	—	—	53	62	70	78
	100	—	—	—	—	—	—	—	—	—	—	53	72
	110	—	—	—	—	—	—	—	—	—	—	28	59
	120	—	—	—	—	—	—	—	—	—	—	—	18
	15	—	92	90	100	106	110	126	124	149	138	147	151
	45	—	—	—	62	52	61	82	71	94	111	111	124
	1	120	171	157	146	174	171	169	166	175	185	171	190
	2	115	141	143	138	142	169	168	159	168	173	165	180
	3	97	134	138	135	140	157	156	159	167	169	164	176
	4	90	126	137	133	140	151	150	157	163	164	162	173
	5	87	125	136	126	137	150	149	152	161	156	160	171
	6	82	113	135	120	128	150	146	151	159	155	159	169
	7	73	105	126	115	127	142	138	150	158	155	158	167
	8	52	104	125	114	127	138	138	145	157	153	158	161
	9	—	103	111	113	122	134	138	136	155	149	155	160
	10	—	101	111	112	120	130	137	132	154	147	154	157

age group need the same bonus as those of the best 40, i.e., any of the 30 from rank 41 to rank 70 should have the ame bonus as any of the 40 from rank 1 to rank 40.

A third method of investigation, C, appears worthy of consideration. It is based on the fact that, say, the fifteenth candidate of each of the equal age arrays is comparable and differs in the long run from other fifteenth candidates only in respect of age, the very thing we wish to correct. In any particular case random sampling may lead to the fifteenth boy of one array being really comparable, say, with the eighteenth of another or the thirteenth, whilst we must remember that at the most advanced ages we have already skimmed off our cream. Let us plot the marks obtained by such candidates against their age (data in Table II). We have a series of points that indicate that the mark gradually increases with age: the smoothest curve through the points is approximately a straight line, which on being drawn by eye gives us the increment as 40 per year (for fifteenth boys at age 10.10 "graduated"* mark is 113, at age 11.10 it is 153). A similar method can be adopted for other ranks: convenient ones are the thirtieth, forty-fifth, and the sixtieth. These all, save perhaps the last, give values that are best fitted with straight lines. Drawing the straight lines we have the following approximate results:

Age	10.10	11.10	*Increment for One Year.*
Rank 15	113	153	40
,, 30	87	139	52
,, 45	69	123	55
,, 60	44	113	69

*i.e., corrected by smoothing by best straight line.

The increments are all of the same order, some 50 p.a., i.e., say 4 per month. If anything they increase the lower the rank, i.e., the lower the mark. If an allowance of a percentage of actual mark (already referred to as sometimes suggested) were to be justified, the increments should *decrease* with rank in any age group.

As a result then of any of the methods indicated above we find that a correction for age is required. It is some 2 per cent. of maximum possible (or 4 marks) per month, and would result, if applied, in a mark, sufficient to win a scholarship, of nearly 100 less in the case of the boy of 10.0 than in the case of the boy of 11.11. This would not merely have the effect of spreading the birthdays of scholarship-winners more equally through the year, but would mean an addition to the number of children under 11 who proceed to secondary education. This is a matter that brings in other considerations. The effect of allowing for these has usually been, in areas where the matter has been investigated, to restrict the examination for scholarships to children of one year age group, or even, as in the case of London, to one half-year age group, and allow each child one attempt and one only. In our case we may assume perhaps that the age allowance will be given between the ages of 11 and 12, but that between 10 and 11 only the allowance proper to age 11.0 is granted. This would give the boy of 10.11 a bigger chance than the boy of 10.0 and perhaps an even fairer way would be to take the results in two sections. Of the 70 boys scholarships decide that say 10 (or 15) are for boys between 10 and 11, and choose from among these by actual mark with the appropriate age allowance: the rest of the scholarships are for boys between 11 and 12, of whom the best have already been chosen in their first year of eligibility. These 60 (or 55) scholarships would be allotted among the best candidates of ages 11 to 12 after the actual mark has been corrected by the appropriate allowance.

The allowance may take the form of a bonus of marks to the younger children. This may exceptionally lead to a candidate having a total of more than the maximum. The alternative is to calculate the allowance as a deduction for older children. This may cause dissatisfaction. The final effect is the same of course in each case: it can if desired simply be stated after the examination is completed that the scholarship mark was, in our case, for example, with an allowance of 2 marks per month between ages 11 and 12, 160 at age 11.10, 156 at age 11.8, 140 at 11.0 and under.

Surveying our results we have:

NUMBERS OF BOYS TO BE AWARDED SCHOLARSHIPS.

Age	10.0 –	10.2 –	10.4 –	10.6 –	10.8 –	10.10 –	
No allowance	0	1	1	0	1	6	
1 mark per month....	0	1	1	1	1	6	
Method A: 2 p.m.....	0	2	2	1	4	7	
Methods B & C: 4 p.m.	0	3	6	4	5	9	
Age	11.0 –	11.2 –	11.4 –	11.6 –	11.8 –	11.10 –	*Total.*
No allowance	5	7	15	9	12	15	72
1 mark per month....	6	8	15	8	10	14	71
Method A: 2 p.m. ..	6	8	15	8	8	9	70
Methods B & C: 4 p.m.	13	8	13	4	2	4	71

As a result the schools receiving these scholars would find the distribution of birthdays on the following lines :

	Aug.-Nov.	*Dec.-March.*	*April-July.*	*Total.*
No allowance	34	25	13	72
1 mark per month..........	31	25	15	71
1 per cent. per month	28	26	16	70
2 per cent. per month	20	27	24	71

There seems to be some excess, already referred to on p. 271, at age 11.4. Except for this, however, allowing for fluctuations due to sampling and remembering that the upper ages of the 11-year-old group are already represented (among last year's scholarship winners) the different allowances give increasingly a fairer distribution of the awards, and it is suggested that for the examination and the examinees in question a proper allowance would have been 4 per month (2 per cent. of max. p.m.).

In a short paper by Mr. A. James in this journal, in November, 1925 (Vol. III, No. 3, pp. 218-219), the conclusion reached was that in the scholarship examination which he was examining the proper allowance for boys between the ages of 10 and 12 was 2 per cent. p.m. of the *actual* mark obtained. The method consisted in comparing the totals of all the marks of the same boys in successive years. The conclusion implies an assumption that all increase at the same rate (measured as percentage of the actual mark) : this assumption is adversely criticized on pp. 276 and 278. A further assumption is made that this rate is composed of two parts, one part being due to the development of the candidate and one part being a constant rate for all candidates at all levels of ability, due to a change in the standard of the examination. It is doubtful if this assumption is valid : it is submitted that the assumptions of the present method are less open to objection.

(*To be continued.*)

The Schools of England.

Edited by J. Dover Wilson. (Sidgwick and Jackson. Pp. xx+388. 18s.)

"WHAT our national education chiefly needs just now is focus," says Lord Eustace Percy in the preface to this book; "during the last quarter of a century we have been so busy building up its various parts, criticizing its defects in detail, and preparing plans for repairs here and extensions there, that we have had little time to stand back and view the structure as a whole." It is the purpose of this collection of essays to provide such a general survey; and it may be said at once that it succeeds. There is no other book in which can be found so complete an account of the educational institutions ("schools," as the editor wisely calls them) of England. These "schools" are now too many and various for any one to speak of them all with intimate knowledge; hence we have a team of sixteen, each a recognized authority on a particular kind of institution. Such a treatment has certain disadvantages. A foreigner investigating English schools might prefer the more coherent, if less informed, account that a single writer could have given; he might well feel bewildered by the enthusiasm with which each showman displays his wares. But for those who already know something of the subject, this diversity adds greatly to the value and the interest of the book. And although there is some amicable disputing among the authors, they are kept together by the general plan of the book as prescribed by the editor.

The breadth of the survey is evident even from the table of contents. "Primary Education" includes nursery and infant schools, public elementary schools, and preparatory schools; while under "Secondary Education" we find yoked together public schools, technical schools, and Borstal. Other sections deal with training colleges, university and adult education, and education in the fighting services; and finally there are valuable statistical and chronological tables prepared by Mr. B. C. L. James. It is unfortunate that there is no account of any private schools but those preparing boys for the public schools by means of intensive cramming for the common entrance examination: there is a sufficient number of little schools run on "progressive" or "modern" lines—"freak schools," as many people would call them—to warrant inclusion, whilst the experiments carried out in many of them are of real value to the national system. A foreign member of the New Education Fellowship, for example, would be puzzled by their omission. Again, one criticism on the arrangement may be offered. The Central school is described in Dr. F. H. Spencer's admirable chapter on the public elementary school, where of course it belongs by regulation ; but on all other grounds it should have come with the other forms of adolescent (or post-primary) education. Indeed, there might have been more said of the " central " or " modern " school, and of the efforts that are being made since the appearance of the Hadow Report to fill the awful gaps in 11+ education, as depicted in Mr. Cholmeley's diagram. Such an account would have been more generally interesting than, e.g., the brief sketch of Educational Training in the Army—which, by the way, makes no mention of the Army Education Scheme which preceded and followed the Armistice; although the author quotes Mr. Fisher's remark about it that " nothing in the shape of adult education has ever before been attempted on the same scale in the whole history of the world."

It is clearly impossible to review each chapter. But at the risk of seeming invidious, one must single out Mr. Salter Davies's masterly guidance through the jungle of technical education, and the clear accounts given by Mr. Ward and Miss Mercier of the training of teachers—accounts which should dissipate the fog of which Lord Esher complained (page 12). Instead of cataloguing many individual excellences, it is better to seek for general principles which emerge from the book as a whole.

First, then, there is the spirit of optimism which pervades the book : its sub-title is " a study in renaissance." With certain exceptions, it is the merits rather than the defects of our system that are described. The editor, in his introductory chapter on " the relation between education and the national life," is quite definitely optimistic about a subject that causes anxiety to many—local control of higher education. He argues that the troubles which sometimes occur are no more than " the infantile complaints of a sturdy youngster, which probably in another decade, certainly in another twenty-five years, it will have entirely outgrown." Not that all members of L.E.A.'s will have become experts : " God forbid ! For I regard the lay control of education, in all its grades, as the surest possible guarantee of the liberty of the teaching profession, the sanity of its practitioners, and the security of our children against intellectual malnutrition by cranks, doctrinaires, and charlatans." No doubt he is right. Even Mr. Ford gets rid of experts and wise people : " they are always so wise and practical that they always know to a dot just why something cannot be done." And yet we could all introduce Professor Dover Wilson to *some* lay members !

But his reply would be, as it is about the incompetents and the megalomaniacs who are still found amongst education officials, that " they are a vanishing race." And that is enough about them : *de mortuis nil nisi bonum.*

Secondly, there is the immensely important principle, which crops up again and again in this book, that education must make for national unity. The editor shows how in former ages trouble has been caused by restricting educational opportunity to members of a class or a religious body ; and he diagnoses much of the present unrest when he writes : " Our industrial troubles arise, I am convinced, from the same cause as produced the denominational strife of previous generations : a whole section of the people feels itself to be disinherited, to be living and working outside the pale of privilege and opportunity." The truth of this statement is plain to anyone who has eyes to see ; and it is familiar to all who have worked, for example, with the W.E.A. ; indeed, one aim of the adult education movement is to rectify, as far as it can (it is often too late) this injustice. The universities, and particularly Oxford and Cambridge, have broken down many of the barriers : " each of the older universities and each of their colleges," writes Principal Halliday, " is a microcosm of the nation. All social ranks, thanks to the scholarship system, are represented, except perhaps that of the manual labourer, though it is not impossible to find his son among the members of a college " The provincial university is more limited in its membership : it caters mainly for one locality, and it very rarely attracts the upper classes. The public school avoids parochialism ; but it fails (as Dr. Norwood fully admits) to avoid segregation of a class. Its philosophy, as Mr. Cholmeley puts it, " is on the whole a philosophy of the well-to-do . . . It is a fine spirit, admirable in many of its manifestations, but it can never bring to the nation as a whole that sense of being essentially the same kind of people which is what this nation needs perhaps more than anything else if it is to survive." Unfortunately the free place system, which should have tended towards unity, has had the opposite effect : owing to that " sense of social distinction which is one of the plagues of education " (again to quote Mr. Cholmeley) parents found the local day schools not good enough for their sons when they had to associate with scholars from the " board school." This snobbery (as Dr. Brock suggests) is less marked in girls' education—presumably because there are not so many good boarding schools for them, or else because a girl's education is still not taken very seriously by that class of parent. Dr. Norwood indeed proposes a remedy: a kind of free place system in the public schools, selection being based on interview, not examination. It may come about some day; but in the meantime we are fortunate in having, with all their defects, the local day secondary schools for our boys and girls.

Another kind of unity, that between education and industry, is emphasized by more than one writer. Principal Morgan states forcibly the need for the highest skill and training in commerce and industry: "local government, trade unions, and above all manufacture and commerce will utilize the university trained mind to an increasing extent. The universities have an immense responsibility laid upon them. It is scarcely too much to say that the commonweal is theirs to make or mar." The same alliance between education and industry is discussed by Mr. Salter Davies in dealing with the junior technical and the day continuation school. The schoolmaster must become wider in outlook (this point is made by others, e.g., by Sir Cyril Ashford, in writing of the Education of the Naval Cadet), whilst of no less importance is "a radical change in outlook on the part of the employer": "the age of adolescence must be brought out of the purview of economic exploitation, and into that of the social conscience." In the inoperative clauses of the 1918 Act we have at least one means of ensuring that the young worker be regarded as a citizen in training.

Lastly, it is noticeable that several contributors decry the increased tendency to specialization in studies. The Advanced Course and the Honours Degree are unsuitable for great numbers who take them. "One of the scandals of the university system to-day," writes Principal Morgan, "is the virtual neglect of the pass student; and unfortunately the Burnham salary scale has intensified the stigma on the man who takes a general degree." It is not of course urged that nobody should specialize; but there should be more discrimination between different types of ability, and more regard for general studies. In this attitude one may perhaps recognize that hostility to segregation, intellectual as well as social, which marks the whole of this valuable and important work.

F. A. CAVENAGH.

Book Reviews.

Dr. Arnold of Rugby: by Arnold Whitridge. With an introduction by Sir Michael Sadler. (Constable. Pp. lii+243. 10s. 6d.)

The centenary of Dr. Arnold's appointment to Rugby has produced this new biography by his great-grandson. The book is in part an answer to certain questions asked at the beginning: "Was Arnold's work important only for his generation, or is his influence still felt in the educational world? In the religious and intellectual life of the early nineteenth century what part did he play? Was he a power to be reckoned with or was he merely an academic pamphleteer?" And in part it is a reply to Mr. Lytton Strachey.

To the first of these questions the answer can hardly be doubted. Not only did Arnold (in Dr. Hawkins's famous phrase) "change the face of education all through the public schools of England," but by this revolution he affected all subsequent secondary schools. For the tone which he introduced into Rugby has permeated all schools, even those of the most recent foundation. Indeed, the point is not worth arguing. The only person of note to dispute it is Samuel Butler, whom Mr. Whitridge quotes: "I cannot find that Dr. Arnold's influence over the school survived longer than that of any subsequent head master, while upon other schools, so far as I have been able to ascertain, he produced—I believe it is not too much to say—no effect whatever." But this is merely a bit of Butler's usual iconoclasm, reinforced by the perfectly justifiable feeling that his grandfather's work at Shrewsbury had been overshadowed by the fame won by Arnold.

The answer to the second question is almost as clear. Whatever power Arnold wielded in the public controversies of his day—and it was very much less than he himself believed—his writings contain little to interest the present generation. His main tenet—the unity of Church and State—never found many disciples, whilst his polemics about the Oxford Movement strike us now as ephemeral. Mr. Whitridge prints as an Appendix the "Edinburgh" article on "The Oxford Malignants." It is certainly a forcible piece of writing; but to the modern reader it seems a lot of fuss about nothing. His edition of Thucydides and his History of Rome have been superseded by later research; even his writings on Education, though interesting for the light which they throw on Arnold himself, contain little of permanent importance.

Yet Arnold's reputation can bear such disparagement. If it be admitted that he is, indirectly, responsible for all that is best in English education, then he needs no more splendid monument. Mr. Strachey of course sees only the ill effects of the system as worked out by his successors: "The earnest enthusiast who strove to make his pupils Christian gentlemen, and who governed his school according to the principles of the Old Testament, has proved to be the founder of the worship of athletics and the worship of good form." Yet it is unfair to judge a man's work solely by what others have built on to it. Mr. Strachey has already "proved to be the founder" of a type of biography of which the world is getting sick; but his own merits are not affected by the extravagances of his imitators. The fact is that Mr. Strachey dislikes the Arnold tradition so much, and is so concerned to paint an amusing picture of Arnold's weaknesses, that he will see no good in him at all. If Arnold had been no more than Mr. Strachey represents him, he could never have been supposed great by anyone; he could never have accomplished any important work in the world. "You will smile at my earnestness or simplicity," writes Arnold in a letter in which he states his objection to the Society for the Diffusion of Useful Knowledge; and that is precisely what Mr. Strachey makes us do. Anyone so lacking in humour as Arnold (though Mr. Whitridge quotes letters that show that in family life he was not so deficient), anyone who took himself so desperately seriously, must appear rather ridiculous. It was the manner of the age: the Queen and her Consort took up and magnified the earnestness already prevalent. Such fervour is now out of date, and more particularly its expression. Here perhaps Arnold suffers from the devotion of his biographer : Stanley was so anxious to include everything, that he published intimate journals which can hardly have been intended for any eye but the writer's. One's general conclusion is that Mr. Strachey has depicted only the solemn pedagogue as he must have appeared to people who did not know him very well, and has entirely omitted any other side of Arnold's character. He has pleaded skilfully as *advocatus diaboli* ; but he has not succeeded.

Mr. Whitridge has made a careful study of Arnold's work at Rugby. There is, however, little to add to the accounts already given by Stanley and Fitch. He is inclined to lay too much stress on the changes made by Arnold in the curriculum. " If anyone else," he writes, " had added history, French, German, and mathematics to the regular list of school subjects, he would probably have been hailed as an educational pioneer." But in effect, as Arnold himself admits, the time given to the new subjects was quite inadequate. Arnold did far more to preserve the old curriculum than to modernize it ; and though the classical teaching as he conceived it must have been a magnificent training for boys whom it suited, yet it was plainly waste of time for the Easts and Tom Browns who formed the great majority. Mr. Whitridge's book is more useful in giving us various letters, etc., hitherto unpublished, which show a very much more human Arnold than Stanley portrays. Sir Michael Sadler in his very valuable introduction explains Stanley's difficulty in having to choose which Arnold to describe : " Should it be the buoyant, high-spirited, cheerful Arnold ; the ' cheerful Tommy ' of whom Keble writes ? . . . or should it be the black-visaged, short-spoken Arnold, whom most boys feared and many hated . . . the Arnold with the jutting under-lip, whose face went ashen with sudden anger ? " Stanley tried to give both sides ; but it was the " formidable pedagogue " who predominated. Mr. Whitridge's book is valuable as stressing the other side, and also as showing " how much Arnold owed to the companionship and intrepidity " of his wife. It sends one to re-read Stanley's Life, and makes one realize more than ever what a masterpiece that is.

F.A.C.

The Symbolic Process and its Integration in Children : by John F. Mackey. (International Library of Psychology. Kegan Paul. Pp. 192. 10s. 6d. net.)

This book has, as its sub-title, " A Study in Social Psychology," and it is by the Research Professor of Sociology at Connecticut Agricultural College.

The first part includes an examination of researches bearing on the development of language in infants. Here the author emphasizes the fact that the child can only " imitate " the sound made by another when it has already made the sound itself, a " fact " very difficult to prove, and one which, if it be true, surely does not rule such a procedure out of the category of " imitation " as Professor Mackey seems to think.

The true symbolic process, the author thinks, begins in the child at about eighteen months, for then he names things and asks the names of things. But infants understand names in some sense before they speak them ; does not this imply some " symbolic process " ?

Later chapters deal with the behaviour control of symbols, the nature of symbolic integration, and reflective behaviour (thinking). The diagrams and schemes of integration give, in somewhat unfamiliar and obscure phraseology, little sound psychology beyond what is already familiar to students of Ward, Stout, James, and Semon, and of the earlier attempts at conceptions of brain tracts and their associations.

C.W.V.

The Folk High Schools of Denmark and the Development of a Farming Community: by Holger Begtrup, Hans Lund, and Peter Manniche, with an introduction by Sir Michael Sadler. (1926, Oxford University Press. 6s. net.)

The Danish people have been remarkably successful in solving a number of difficult problems, political, economic, and cultural. They are one of the most democratic, and at the same time one of the most prosperous, nations of Europe; they have learnt a fine patriotism that is free from aggression; there is among them exceptionally little distinction of social classes; they have succeeded, where our forefathers signally failed, in reforming agriculture without evicting the smallholders.

Although there is no simple explanation of these advances, a cause of great importance has been the influence of the folk high schools.

The whole movement of adult education in Denmark was inspired by Grundtvig, pastor, teacher, and poet, who lived to see his hopes of a spiritual and cultural awakening splendidly fulfilled. From a small beginning, made at Roding, North Schleswig, in 1844 (the year of the Rochdale Pioneers) the movement has grown continuously. There are now about sixty high schools, with an annual attendance of nine thousand students, as well as a large number of lecture centres, in which the work of the schools is continued and extended.

The schools are of many different types. Several have been strongly nationalistic, not without reason. Young men from Schleswig, compelled to learn the German language and to serve in the Prussian army, would cross the border as soon as they were free, and would learn in high schools or continuation schools (Efterskoler) the language and culture of their kinsfolk. Nothing did more to keep alive the courage of the Danes through the dark years of war and defeat than the inspiration of Askov, Dalum, Vallekilde, and their sister foundations. Some later schools have had political aims, others have given technical teaching, mainly in agriculture. Some have specialized in physical training. Those who saw the performance of Herr Bukh's pupils during their recent visit to this country are aware of the wonderful results that can be produced when young men and women, already made strong and active by life on the farms, are given a scientific training in gymnastics.

But although the schools vary in their scope and aims they all have a great deal in common. They are residential colleges, in which the staff and the students live together as one family. Most of the students are sons and daughters of farmers. The schools are endowed by the State, but they are entirely self-governing. Above all, they have kept the humanistic spirit communicated to them by Grundtvig and his great supporter, Christen Kold. Everywhere history, literature, and music constitute a large part of the course. In the earlier schools most of the history was not even modern. There was much study of legends of the heroic age, which fired the imagination, just as the minds of the ancient Greeks were uplifted by the "Iliad" or the "Oresteia." The leaders of this movement have always insisted on "the living word" as the great instrument of adult education.

Yet this teaching, humanistic and æsthetic, has had most striking practical results. Students have returned to their ordinary work invigorated in body, open and alert in mind. The great agency of progress in agriculture has been co-operation, and co-operation in Denmark owes almost everything to the high schools. A large proportion of co-operative officials, local administrators, and leaders of public life generally, have been high school students. It is chiefly through the influence of the high schools that a peasantry, once dull and unenterprising, has become one of the most progressive farming communities in the world.

In the book under review a very interesting and authoritative account of the whole movement is given by three of its leaders. In a short but effective introduction Sir Michael Sadler points out the services of the high schools to Denmark and the reasons of their success. A chapter of particular interest to English readers deals with the International Folk High School at Elsinore, The founder, Mr. Peter Manniche, who is also the author of this chapter, received a good deal of support in his venture from friends in England. Among both the staff and the students at Elsinore, Great Britain is always well represented.

The movements of adult education in Denmark and in England have followed very different lines. The one movement has been taken up largely by farmers, the other by town workers. Most of our students in this country have been interested first and foremost in economic questions: the Danes have more often sought for width of interests and understanding of life. But the two movements are drawing together, partly by normal development and partly by direct association. In Denmark attendance at the high schools is increasing among the town populations: with us, the W.E.A. and other agencies are extending their work in country districts. Our educational settlements in industrial towns—Fircroft, Beechcroft, Swarthmore, and the like—are folk high schools under another name; Coleg Harlech takes industrial employees to study for a time in a beautiful house between the mountains and the sea; and Avoncroft, near Evesham, has set an example of a rural high school of the true Scandinavian type.

Further, the range of adult education in England is widening. Literature, history, music, art, and pure science are far more studied than they were in earlier years. We are approaching by a different route the ideals and outlook of Grundtvig; and we may well take encouragement from the experience of his followers. For the Danish high schools have shown not only the possibility of widespread culture among the common people, but also the great effect of this culture in everyday affairs—in economic efficiency, in government, and in social organization.

C.G.

The Moral Self: by C. L. Sherman. (Ginn and Co. Pp. x+365. Price 12s. 6d.)

The author, an American Professor of Philosophy and Education, has attempted to introduce readers to the science of ethics. The scheme of the book is excellent; it contains, first, an account of the biological conditions which help to make possible a moral character; then descriptions of the psychological laws and conditions which determine the forms of the moral self, and of the factors determining social experience and realization, and, lastly, an account of some of the main aspects of moral judgment.

The book, however, is more than an introduction, as the writer assumes that the reader is already familiar with the works and views of the chief thinkers in the various spheres to which he refers. To the student who has read widely the book will be valuable as a stimulus to him to synthesize his own knowledge and will be interesting as an essay in synthesis by a thinker who is seriously concerned in maintaining the dynamic view of personality as a "moving equilibrium" with "self-consciousness, self-freedom and self-realization as the highest reaches of a creative personality."

The author declares that he has striven to avoid technical terminology so that the book may not be too difficult. In his efforts he has in the main succeeded, but in aiming at simplicity he appears at times to have become verbose, and occasionally to be superficial in his analyses.

In spite of these faults, partly perhaps because of them, the book is well worth reading by those who are interested in the serious study of the moral development of human beings. A.E.C.

The Approach to Teaching: by Herbert Ward and Frank Roscoe. (Bell and Sons. Pp. x+208. 5s.)

On reading this book, one is convinced that the writers have a wide knowledge of the details of classroom organization and class management, particularly in the elementary school. So far as hints on technique are concerned, the work is sound. The authors recognize, and warn young teachers against, the danger of adopting as rules to be applied at all times what are only meant to be suggestions. At the same time they realize that for want of technique " much good teaching, otherwise well conceived, fails of its effect." Much useful advice is given to the novice.

Unfortunately, however, for the deeper usefulness of the book, it is also true, as they say, that "Technique is not everything in teaching. Looked at from an ideal point of view it is not the most important element in teaching at its highest " (page 86). It is definitely stated that " the principle is what matters most " and again that " good method can result only from the constant observation of certain broad principles " (page 63). It is recognized that psychology is fascinating and illuminates school experience for young as well as for old teachers, and "even contributes to the solution of their difficulties" (page 19).

But how many young teachers, if this book were the only source of advice, would turn to that fascinating subject for the help it admittedly gives when they are told, as they are in Chapter III, "The Pupil," that "the beginner should not think himself obliged to study formal psychology as a condition of taking his work in a serious spirit," and that " Psychology is no longer the comparatively easy science which it appeared to be fifty years ago ; it is full of unsolved questions, and of terms to which psychologists attach different meanings; and it demands a maturity of experience and a capacity for moving easily in the region of the abstract which are not to be expected in a young teacher " ?

And how many lecturers in our more advanced training colleges and university departments would believe that " Before any practical application is reached the student must cover a great deal of ground, learn a new vocabulary, which is all the more perplexing because some elements in it have a dangerously familiar meaning, and approach the very greatest of problems, such as the inter-relation of mind and body, which engage the attention of the profoundest thinkers " ? (page 19).

Another point which deserves notice is that the authors declare that the heuristic method " should not be used in the vain hope of enabling a child to retraverse, in a few years of schooling, the long road by which the human mind has reached its present attainment of knowledge and power . . . " " Children imbibe knowledge and acquire aptitudes through many channels, and over-systematization of a few may result in a closing of the others " (page 185). Where is the application of this commendable belief in certain limitations of the heuristic method ? Probably it is true that one only learns to teach by teaching, but surely too one learns to teach badly by teaching badly. Why postpone until the young teacher has acquired a body of experience in a direct way the invaluable help that can be gained from those authorities in education who have systematized the knowledge of principles and psychology applicable to school work ? Surely this is wasteful. The attitude suggests a childlike faith in young teachers' unguided powers of introspection and observation. However, the writers *do* suggest, surprisingly enough, that after this body of direct experience has been acquired the teacher " will find it useful to consult some of the books named hereafter, and to see how material acquired in his own life is arranged by men of wider and deeper experience, and how they explain and try to clear up the many difficulties and puzzles he will encounter" (page 22).

In some important respects the book is inconsistent and unpsychological. It is indeed difficult to understand how writers who have, presumably, read and appreciated sufficiently to recommend them to others, the sound and useful books included in the Bibliography, could have written it. It would have been better if they had confined themselves entirely to that part of their subject of which they appear to be masters, i.e., technique, and had left the psychology and principles underlying their technique to be made clear by the books recommended.

This sentence concludes the book : " The important thing is that no one should rust or grow stale, and that each should have a mind with a growing point " (page 197).

To the present reviewer the facts are these : To concentrate attention upon acquiring craftsmanship to the extent suggested in this book with a casual glance at authorities at a later stage, tends to turn out teachers who do not improve after the first few years, while to study theory and practice together in the earliest stages, aiming at some skill in technique but a wider knowledge of principles, is the way to turn out teachers with " minds with growing points," if such an unpsychological expression be permitted.

F.M.A.

Curriculum Making in an Elementary School : by the Staff of the Elementary Division of the Lincoln School of Teachers' College, Columbia University. (Ginn and Co. Pp. xi+359. 8s. 6d.)

" Let us have an experimental school which will specialize in the development of better curriculum material or test the validity of that which is already in use." This has been the primary reason for the existence of the Lincoln School and this book, a co-operative effort on the part of the whole staff of the elementary division of the school, gives the result of ten years' work.

Every teacher of children under twelve would do well to read this book, so full of suggestions is it as to ways of developing a school course with real live interests, and with contacts at every point with the outside world. The child's own wants and needs are always taken as the starting point, and from these lines of investigation spread outward, drawing into the " project " the study both of present day activities in the world at large and of their development from simpler beginnings.

It may be seen that behind this movement is the influence of Dewey ; the work of the Lincoln School appears to be a whole-hearted attempt to put his philosophy of education, and the methods he advocates, into practice.

Instead of the usual division of the curriculum into subjects, some " unit of work " is the main centre of interest for each grade, this unit leading to a great variety of activities in which, as a matter of fact, the various " subjects " play a quite considerable part ; for example, typical units for the various grades are : First Grade (children of six to seven)—Animal Life on the Farm, A Study of Community Life with the Building of a Play Village ; Third Grade (children of eight to nine)—China, Indian Life Unit ; Fifth Grade (children of ten to eleven)—Water Transportation, The School Bank ; Sixth Grade (children of eleven to twelve)—How Man has made Records, How Man has told and recorded Time.

In connection with these units, many trips are made to see museums, factories, libraries, etc., just at the moment when the need for this first-hand experience is felt in order to do or to make something required for the " project." The units are in many cases initiated by the children, but when they have no suitable ideas the teacher makes suggestions.

It may be wondered whether in this way the children have sufficient drills in subjects requiring them, such as arithmetic, reading, and spelling. Drills take place when the need for them is felt, the time spent in drills in arithmetic varying from about fifty minutes weekly in the Second Grade to two hours weekly in the Sixth Grade, a mere fraction of the time spent in most English schools.

The average intelligence quotient of the pupils at the Lincoln School (Elementary Division) is about 119, which would suggest that the children should be above the average in accomplishment. This appears to be the case, judging by tables which are given showing the average chronological and mental ages of the children in each grade, and their average educational ages, based respectively on the Stanford Revision of the Binet Intelligence Tests and the Stanford Achievement Tests in reading, arithmetic (both reasoning and computation), and spelling. The children are even level with or in advance of their average mental age in reading and arithmetic (both reasoning and computation), by the time they are in Grade Six.

The authors of this book are most anxious to find out if similar methods would be suitable for other types of schools, and would welcome further experiments. In the Lincoln School there was the advantage of small classes and an adequate number of rooms, some with special equipment. It would be difficult to carry out these plans in just this form in the average English elementary school under present conditions of numbers and lack of space, but something on these lines might be attempted. In any case, the book may be heartily recommended to teachers for its many helpful and original suggestions.

E.S.

Ability : by Victoria Hazlitt. (Methuen. Pp. ix+147. 6s.).

This book is divided into two parts, the first of which is an interesting theoretical discussion of the nature of ability, whilst the second part is devoted to an account of a three years' experimental study of special abilities in Arts and Science.

In Part I stress is laid on the idea that the drive to use original endowment of mental gifts comes from the emotional and instructive nature in relation to the exigencies of the environment (p. 74). Practical consequences of the acceptance of certain interpretations of the nature of ability are pointed out, for example, the attention necessary to the experiences of very early life, both on the emotional and on the more purely intellectual sides. In this part also some general principles regarding mental tests are touched upon.

In the second part the writer gives an account of an investigation, designed to test the possibility of some scheme by which students entering the university might be tested and given guidance as to choice of faculty, e.g., a warning might be given to those who would be likely to have special difficulties in either the Arts or the Science Faculty.

The subjects were University students at Bedford College, and many interesting facts were revealed. On the results obtained Miss Hazlitt has based some interesting hypotheses, e.g., that good general intelligence is more necessary for good work in the Arts Faculty than for work in the Science Faculty; that students with good general intelligence but lacking in interest in human nature are not likely to succeed in Arts; that though original work in Science requires good general capacity probably a student who would have difficulty in Arts through comparatively low general capacity might succeed in the Sciences if he had developed the special abilities involved.

It is only fair to point out that the writer expressly states that this investigation was entirely exploratory, and is still proceeding. It is highly probable that she would be the first to denounce any attempt to take her results as conclusive, especially in view of the fact that to some extent the distinction between Arts and Science is superficial.

F.M.A.

Emotion and Delinquency : by L. Grimberg, M.D. (Kegan, Paul and Co. Ltd., London, 1928. Pp. x+148. Price 7s. 6d. net.)

This is a clinical study of delinquents in the making, the material being derived from the investigation of five hundred girls and young women examined at the New York Neurological Institute. The book differs from many recent works on this subject in that no statistical tables are presented. The author, no doubt, felt that the number of his cases was too small to justify the adoption of the statistical method. He has, however, done good service in presenting this general view of his findings.

In reading the book one most important difference between America and this country must be kept in mind. The population of New York contains a large foreign element. The immigrant families possess a culture tradition which is at variance with that of the native American. As a result, the child born into one of these families has to face a double conflict ; there are the adjustment problems which confront every child, and these are reinforced by the special difficulties arising from his immigrant origin. It is, therefore, not surprising to find that maladjustment is rated very highly as a causative factor in the production of delinquency.

The author found that fifty per cent. of his subjects were mentally defective or retarded. This would be considered a very high proportion in this country, and depends, of course, upon the standard of comparison which is adopted. But the author urges that the intellectual elements are of minor importance as compared with the emotional elements. Our present methods of estimating emotional instability are crude, and our task should be to improve them. For all modern criminologists agree that no real progress will be made until such time as we have far fuller knowledge of the emotional factors in delinquency.

It is generally admitted that Lombroso and his immediate followers were inclined to lay undue stress upon the influence of heredity. Dr. Grimberg thinks that the pendulum has now swung too far in the opposite direction, and he is disposed to attach considerable importance to the hereditary element. He makes what many will regard as a sweeping statement in saying that some of his subjects were " born devoid of the potentiality to adjust themselves to our social order." He does not, however, believe in the existence of a "criminal type"; he holds that the inherited factor is a constitutional inferiority. He inclines to the view that psycho-pathology has an organic basis, and he places that basis in a defective endocrine system. This raises, in an acute form, the whole question of the psycho-physical relation.

Dr. Grimberg did not find economic factors to be of moment in the production of delinquency, and he points out that his case histories show the delinquent characteristics to have been exhibited quite early in life, and apart from the first contact with the law. " The motives of delinquency go back to infancy, and can be traced to the defects of our understanding of the biology of social, family, and individual life. It is futile to attempt to find these motives in one particular act or offence."

There is nothing which is very novel in the book, but it is a worthy record of good clinical work ; and it should do something to focus attention upon a pressing social problem. It is no criticism of the author to say that he does little in the direction of suggesting remedies, for such was not his object. (He advocates the employment of psycho-analysis in selected cases.) But the time is now ripe for the propounding and trial of remedial measures. Experience indicates that the more enlightened of our magistrates are eager for assistance in this direction. They are confronted with a practical problem. A girl is in the dock, charged (say) with larceny. What is to be done with her ? Let us assume, a magistrate may say, that the findings of the psychologist are well founded ; let us assume that mere " punishment " is futile ; what then ? Some form of psycho-therapy is indicated. But where is that treatment to be obtained. The time has surely arrived for the establishment of institutions in which these cases can be studied for a sufficient period, and in which individual treatment can be applied quite apart from the use of any " system." It is entirely necessary that society should be protected from the depredations of delinquents. It is just because society is, at present, most inadequately protected that a change is pleaded for by modern students of the problems of delinquency.

M.H.S.

Pre-School Education : by I. Forest. (Macmillan. Pp. xiii+413. 7s. 6d.) This historical and critical study is the outcome of recent changes in the prevailing attitude toward the problem of early education. In the words of the introduction, the author sets out to consider :

> " 1.—Certain widely-prevalent social attitudes which have at different times and in varying degrees influenced the character of early education.
>
> 2.—The development of institutions for the education of young children as this development has been affected by prevailing social attitudes and by the efforts of certain individuals.
>
> 3.—Certain modifications in older attitudes, theories and practices, which a consistently democratic philosophy seems to require.
>
> 4.—The present status of institutions for early education, and the general lines along which such education seems to be developing.
>
> 5.—The particular contribution of the nursery school movement to the theory and practice of early education in the light of a democratic philosophy."

Along the lines indicated, the book presents a very thorough-going account of the development of the social attitude towards childhood, together with the changes in institutions and practice brought about by this changing point of view. The writer makes free use of quotations from the writings and speech of philosophers, educational reformers, and teachers, and thus gives the student an adequate acquaintance with the work and thought of the many pioneers whose combined efforts have culminated in the present state of early education. This present state comprises three institutions—the Day Nursery, the Kindergarten, and the Nursery School—all having for their aim the care and education of the " pre-school " child.

A full account of the activities of these different institutions, both in England and America, is given, with a very fair discussion as to their relative values, and more particularly as to the precise value of the nursery school in relation to different types of homes. The author's opinion is that we have not yet arrived at the ideal arrangement for the pre-school education found so desirable, and that one of the chief functions of present-day institutions is that of research in order to add to our store of knowledge ; for though " poorly considered community control of the pre-school period might indeed jeopardize the parent-child relation," yet " it is readily conceivable that the nursery school, wisely planned and conducted, may prove a valuable means of preserving this relationship amid the difficulties and complexities of modern society."

The book provides really enjoyable reading, and a fund of valuable information to those interested in the welfare of the younger children. It has a very good bibliography.

L.E.S.

Extra-curricular Activities : by H. C. McKown, Assistant Professor of Secondary Education, University of Pittsburgh. (The Macmillan Company. Pp. xxi+617. 12s. 6d. net.)

This book analyses the more important activities found in American high schools—many of them in operation in English schools, others quite unfamiliar to those whose educational experience is limited to England. Assuming that the principles of extra-curricular activities are now pretty well established, the author regards the presentation of programmes of activities as the main purpose of his treatise. From a careful collection of material gathered in all types of American schools, he presents for the benefit of the average teacher the most important of such material.

From a brief statement of the principles underlying his subject, he proceeds to consider seriatim the various forms of activity, their values, organization, development, and application. The necessity that pupils shall practise rather than merely study, co-operation—" one of the most important demands of citizenship "—is strongly emphasized throughout the book as the best means of securing that training in the principles of democracy which is an indispensable preparation for membership of a democratic State. The Student Council, representative of the school as a whole—principal, teachers, and pupils, not merely of the senior pupils—should inspire and assume responsibility for the whole of the activities undertaken. Means of securing team-work, the care of school and personal property, service, discipline, social training, are treated in a manner which will interest and stimulate teachers who are eager to foster the corporate life of their pupils.

Methods of estimating qualities and powers of pupils ; reports on habits and aptitudes ; the degree of encouragement and of limiting participation in activities in accordance with the available time and energy of the individual pupil ; are valuable features of the book, as are also short summaries of each chapter, full references to books dealing with each of the activities considered, and a reliable index.

Whether time spent in many of the forms of activity treated in the book is well spent in such directions is debatable. The author admits this and points out the dangers of over-emphasis, formalization, and lack of community support. He pleads for extensive experiment and research, which should result in establishing a field of usefulness of the so-called extra-curricular activities as selective agencies. More may be learned of the student through his participation in these affairs than can be learned through the more repressive and artificial activities of the classroom.

H.P.L.

Studies in Psychology : by William Elder, M.D. (London, 1927. William Heinemann (Medical Books) Ltd. Pp. xvi+212. Price 8s. 6d. net.)

This book is most definitely written from the neurological aspect. The author holds that psychology is best approached from this side. He contends, and we should quite agree, that no psychological hypotheses should be accepted which can be shown to be contrary to the facts of physiology and biology. He waives the question of the existence of a " psyche " apart from the brain, but he maintains that it is through the brain that the " psyche " evidences itself. He avoids the difficulties involved in epiphenomenalism by adopting an animistic position, and on this point, as on others, he would appear to be at one with McDougall. The account given of the mechanism of the nervous system, and of the various mental phenomena which are discussed in relation thereto, is strictly orthodox from the standpoint adopted by the author. If this account does not contain anything new, it is, at least, sufficient for the general reader.

As is the case with all modern books on psychology, the Freudian theory receives much attention. Dr. Elder is, quite distinctly, not a follower of Freud. He objects to the term " unconscious mind," and maintains, quite truly, that this expression tends to obscure the basic truth of the unity of all mental life. He criticizes Freud's conception of the " censor," holding that this is very liable to be personified as an entity. The censorship is, actually, a name for the sum of inhibiting influences existing at any particular moment. But we feel that the progress of modern psychology has, like that of other sciences, been hindered by the tyranny exercised by certain words. Whether we speak of repressed complexes, or (as the author prefers to do) of " hidden and unexpressed thoughts," does not seem to be of any ultimate moment. As for the " transference," to which great exception is taken by the author, it is admittedly difficult for anyone who has no practical experience of psycho-analysis to grasp fully what is meant by that term.

Much of the book is occupied by a discussion of dreams. While he maintains that dreams do not occur during deep sleep, Dr. Elder will not accept the view that the dream is a protector of sleep. He notes that recently bereaved widows seldom dream of their lost husbands, but he declines to agree that this fact tends to support the " sleepguarding " theory. He refers to the difficulty of explaining the recurrent horrible dream as a wish-fulfilment. This question is discussed by Freud in " Beyond the Pleasure-Principle."

Dr. Elder objects to the " state of parti-dissociation which is approached during psycho-analytic séances," yet he believes that it is from a study of dissociation that advances in clinical psychology may be expected.

M.H.S.

The Mixed School: by B. A. Howard. (University of London Press. Pp. 248. 6s.)

Now that so large a proportion of boys and girls in England (and still more in Wales) attend mixed secondary schools, it is important to examine their special problems, and to inquire whether this type of school is justified by its results—moral and physical, as well as intellectual. This task has been undertaken by the head master of the Addey and Stanhope School, who has had experience in boys' schools as well. His verdict is almost entirely favourable ; and it seems justified by the facts as he presents them. On the theoretical side little is known beyond the findings of the Consultative Committee's Report : Mr. Howard agrees that there are no marked general differences between the sexes in their capacity for school work. He quotes interesting figures from Middlesex which indicate that the boy or girl in a mixed school is not handicapped for examination purposes ; nor does he agree with the view so often expressed that girls in mixed schools are necessarily overworked. It is plain that in these, as in all other schools, success depends on the wisdom of the head and his staff. The head master of a mixed school must avoid bias towards either sex, and he must be able to rely on the good sense of his senior mistress. F.A.C.

Economic Life and the Curriculum: by Henry Harap. (Macmillan. Pp. 175. 5s. 6d.)

In his book, " Economic Life and the Curriculum," Mr. Harap has brought together evidence of an interesting development in the planning of curricula for American schools, and one which raises a number of important educational problems. The book might more justly be called " Education for Social

Efficiency," for that is the educational goal which Mr. Harap, and other American educationists, have set before themselves. He points out that " the schools have not taught our population to live effective economic lives," and adds : " It is necessary to study American economic life ; to ascertain what knowledge, habits, and skills will make economic life more effective ; and to make their acquisition a part of the daily activity of the children in the schools of our nation." Mr. Harap's view of economic life is mainly confined to the family as a consumer of economic products, and he tellingly exposes the ignorant defencelessness of the ordinary consumer in withstanding exploitation by manufacturers. In his book he then goes on to give illuminating synopses of a wide variety of American schemes for reconstructed school curricula, which aim at turning out well-informed consumers and family managers.

These American educational reformers set much store by what they refer to as quantitative determination of objectives of economic education. With a view to increasing the efficiency of workmen, psychologists have developed a certain technique of analysing an industrial job into its contributory movements and skills, in order to be in a position to give advice as to the most efficient way of performing the job. On similar lines, the American educationists have set about the careful analysis of various social economic activities, in order that they may give advice as to where and how the school may help to improve them, by making the children more knowledgeable than their parents have been.

The discussion of the school's part in the task of modern social regeneration raises a number of highly important educational problems. Are we to educate our children for real life in a modern industrial community, or for an ideal Utopia, which does not in fact exist ?

If we agree to prepare our children in some degree directly for coping with the real adult environment, by giving some school training in the economics of family and industrial life, what is to be the economics content of the curricula in our elementary, secondary, and vocational schools ? How is that economics content to be related to more formal and more academic studies ? Is it for instance to be a separate part of the curriculum, assigned a definite proportion of the school time ? Are academic studies to be incidental to economics, or economics incidental to the older three R's, and their modern extension into literature, history, geography, mathematics, and science ? These are very vital problems, and the American experimental solutions for them, sketched in this book, make stimulating and suggestive reading, if only because they so often strike directly across our accepted English principles of education.

Throughout one feels that the violence of the reaction, against the traditional conception of school education, has limited the outlook of the reformers, so that their view of human nature is much too narrow to be psychologically justifiable ; one feels that the child is often being sacrificed to the man ; that wisdom is being subordinated to knowledge ; that these would-be reformers have not taken the trouble to make any clear distinction in their minds between the functions of a general liberal education, and a technical vocational training.

Nevertheless, it was well worth while to compile this book, in order to illustrate a lively American movement, which challenges much that American education has inherited from its old-world connections. From our own point of view, it is well worth while to be reminded so forcibly, that educational theory and practice must have a clear relationship to the social needs of our modern world.

J.G.MacG.

The Neurotic Personality: by R. G. Gordon, M.D., D.Sc., F.R.C.P. (International Library of Psychology, Philosophy, and Scientific Method. Kegal Paul. Pp. 295. 10s. 6d.)

This is a very useful contribution to the newer psychology of the unconscious, by one who is at the same time a practising physician and a careful and critical student of modern psychology. After dealing with such topics as the construction of a personality and with neuroses regarded as failures of adaptation within the personality, Dr. Gordon goes on to consider in detail the anxiety states, obsessions, and dissociations in which his particular qualifications show to greater advantage. His attitude may be described as that of one who, whilst obtaining some of his most fundamental ideas from the work of Freud and Jung, yet rejects some of their characteristic views as the result of his own experience and of psychological criticism; for example, he finds no evidence from his own experience as a physician of the Œdipus Complex. This independence and the positive contribution based on his own experience makes his work of all the greater value. C.W.V.

Why Mr. Bertrand Russell is not a Christian: by H. G. Wood. (Student Christian Movement. Pp. 159. 4s.)

This is a reply to Mr. Bertrand Russell's own pamphlet, "Why I am not a Christian." Whilst it is not the function of THE FORUM to deal with religious controversy, we feel that we must commend this delightfully written book by the Principal of the Woodbrooke Colleges because it would serve so well as one of a small group of books chosen to introduce a student to Christian apologetics, though no doubt the author never thought of performing such a service. Also we feel that in noticing this book without having previously reviewed Mr. Russell's pamphlet we are in no sense unfair to the latter, for one of the results of Mr. Wood's book will surely be that many, after reading it, will obtain Mr. Russell's pamphlet to follow more thoroughly Mr. Wood's trenchant criticism. Our author points out that Mr. Russell seemed "spoiling for a fight," and that it was a pity, therefore, that he should not have one. The book never descends below the level of serious argument (which is at times masterly) demanded by the importance of the topics dealt with, yet it is written with a clarity, liveliness, and, at times, keen wit, which, if one does not look for it usually in theological dissertations, is more to be expected when one reflects that the author is an ex-President of the Cambridge Union.

C.W.V.

The Social and Political Ideas of some English Thinkers of the Augustan Age. Edited by F. J. C. Hearnshaw, M.A., LL.D. (G. Harrap and Co., Ltd. Pp. 247. Price 7s. 6d.)

This volume continues the series of lectures delivered at King's College, University of London. The topics and authors are: The Augustan Age (G. N. Clark); Sir Robert Filmer (J. W. Allen); George Savile, Marquis of Halifax (A. W. Reed); John Locke (C. H. Driver); Jacobites and Non-Jurors (H. Broxap); Benjamin Hoadly, Bishop of Bangor (Rev. N. Sykes); Daniel Defoe (Miss A. E. Levett); Jonathan Swift (G. B. Harrison); and Henry St. John, Viscount Bolingbroke (The Editor).

The thinkers dealt with in this book are, with the exception of Locke, controversialists rather than great thinkers, and most of them were contemporaries, so that they were concerned with the same series of events. The essays trace the development of the two great political parties, Whig and Tory, and show how the underlying principles are revealed in the attitudes taken by these disputants towards the questions of their day.

Useful bibliographies follow each essay. A.E.C.

Fitness for Work : by T. H. Pear, M.A., B.Sc., Professor of Psychology in the University of Manchester. (University of London Press. Pp. 187. 5s. net.)

A very good reason for the appearance of this book is to be found in its last chapter, which is entitled " Is industrial skill worth while ? " In this chapter Professor Pear discusses the position of skill in industry, a theme which he has very much at heart. The machine-shops of modern industry have excited a good deal of resentment in the bosoms of certain litterateurs who maintain that man is becoming a soul-less machine, and that skill and craftsmanship are fast disappearing. Mr. Ford writes that 43 per cent. of the jobs in his workshops require not more than a day's training, 36 per cent. require from a day to a week, 6 per cent. a week to a fortnight, 14 per cent. a month to a year, 1 per cent. one to six years, so that the skill required for 85 per cent. of these tasks can be acquired in not more than a fortnight. How unlike the old days, when the craftsman had to serve a long apprenticeship ! The skill of the machine is leaving work only for the dull and defective : the simplicity and dull monotony of work in a modern factory are putting a premium on mental deficiency. The intelligent workman can only exist at his work, he must look to his leisure for real living ; he can no longer be expected to work for work's sake.

It is interesting to find that some of the " captains of industry " who are more concerned with what happens in the factory than with writing about it are not so pessimistic. One of these, in a discussion at the recent meeting of the British Association in Glasgow, stoutly maintained that the proportion of skilled workmen was as high as it had been fifteen years previously, and quoted in support of his contention statistics collected in his own factory during the last fifteen years ; as fast as one type of skill was eliminated other types were called into being.

This kind of problem and his own keen interest in the psychology of skill have induced Professor Pear to set out in this book some of the more interesting and somewhat neglected questions regarding skill, such as its nature, its relationships to intelligence and intellect, its various psychological aspects, and the motives behind it. In the first chapter he essays the necessary but thankless task of defining terms. The word " skill " is used with so many meanings that he would have done a service to psychology by coining a word for what he means by skill. His concept of skill as an integration of well-adapted performances will commend itself to all who have hunted among the various uses of the word for a meaning which is really valuable. It is doubtful, however, whether in thus restricting the use of the word he helps toward a solution of the problem of the position of skill in industry. One would like to hear more about this integration of well-adapted performances ; perhaps Professor Pear will some day develop his very attractive suggestion that Professor Spearman's distinction between reproduction and eduction may apply here also, for skill implies habits which must be " supplemented, modified and controlled by eduction."

The discussion of the nature of skill is followed by chapters on " Motives in work and play," the psychological aspects of work, and laziness and stupidity, in which the author has managed to cram an amazing amount of information and to make a great many valuable suggestions. The chapter on " laziness, with some remarks on stupidity," should be read by every teacher. The whole is written with Professor Pear's characteristic fluency, and teems with pleasing metaphors and topical allusions.

S.D.

Problems in Class Room Method : by G. D. Waples, Ph.D. (The Macmillan Company. Pp. 609. Price 8s. 6d.)

This book is concerned with teaching problems rather than with problems of learning. The author attempts to show how educational principles can be applied to specific teaching problems. In the first part forty-one problems, propounded by experienced teachers, are classified and stated ; the solutions proposed by these teachers are given and criticized. The problems are arranged under the following heads : Presentation of Subject Matter (5), Directing Pupils' Learning (7), Routine of Class Management (10), Securing Pupils' Co-operation (9), Pupils' Personal Traits (7), Teachers' Personal Traits (3).

The second part contains a classified list of 424 typical difficulties confronting teachers of any high-school subject ; these are followed by suggestions for solution as obtained from professional literature, from teachers in service, and from students in training.

The book is necessarily general in its treatment of the various problems, but should prove of real value to teachers and should be available to all for reference.

As regards most of the suggested solutions teachers will be in agreement with the author, but occasional statements, such as : " It is futile to test pupils by oral questioning upon familiar material," suggest either that the analysis of the problem has been incomplete or that conditions and traditions in American schools prevent the adoption of methods which have been found successful in Great Britain.

Not the least valuable part of the book is at the end, in the many appendices which contain analyses of difficulties arising in teaching specific subjects in addition to analyses of teaching, learning, and other activities, of teachers' traits, and a brief description of the techniques adopted in preparing the book.

The book is well indexed. A.E.C.

Fundamentals in English : by E. A. Cross. (The Macmillan Company. Pp. 525. Price 10s. net.)

This volume in the American Teachers' College Series deals with the subject matter of formal English from the professional point of view.

In Part I the author gives an account of the development of the English language so as to supply the historical background which every effective teacher of English should possess.

Part II is devoted to a study of Grammar, and includes chapters on Aims and Practices in Teaching Grammar, the Psychology of Grammar Teaching, and Tests and Devices for measuring the results of English Teaching.

The book is an excellent example of a type of book that is needed in training colleges. The subject-matter is carefully selected, and is presented in a form which should appeal to the teacher. Though it has been written with the needs of American teachers in mind, it contains much that is valuable to teachers in this country. Unfortunately, the price is high and most of the references are to American books.

Part-Time Types of Elementary Schools in New York City : by Frank M. Quance . (Columbia University Bureau of Publications. Pp. viii+49.)

Certain modifications of the traditional type of school organization have been made from time to time. This book presents the results of a study carried on in New York City to determine the effects of two types of these modified school organizations upon pupil progress in the fundamental subjects of the curriculum.

Correspondence Schools, Lyceums, Chautauquas: by J. S. Noffsinger. (Macmillan. Pp. vi+145. 6s. 6d.)

This is one of the Studies in Adult Education Series, and is the report of a piece of work done under the auspices of the Carnegie Corporation, which aims at improved education in the United States. It is an account of the vast machinery which exists for instruction by correspondence (exclusive of University extension correspondence departments), and in lesser degree, for instruction and entertainment in the form of lectures and concerts under the auspices of chautauquas and lyceums.

The Social Composition of Boards of Education: by George S. Counts. (University of Chicago. Pp. ix+100.)

This is one of the Supplementary Educational Monographs Series published in conjunction with *The School Review* and *The Elementary School Journal.* As the title indicates, it is a study in the social control of public education in U.S.A.

SUMMARY OF ARTICLES IN OTHER JOURNALS.

Zeitschrift für Pädagogische Psychologie. Among articles published during 1927 are those noticed below:

No. 2, February, contains HILDEGARD HETZER: *Systematic and continuous observations on young people during the course of the "negative phase."* This follows up Charlotte Bühler's work on juvenile diaries, which indicated a negative pre-puberty stage. Such negative phases were observed in 70 per cent. of the girls in a refuge between ages 11, 8, and 13 years. The phase lasted two to nine months. Being raw and ill controlled, the material was good for observation. Symptomatic were passive behaviour, lack of interest, need for solitude, neglect of productive work, taking pleasure in nothing; the girls were restless, unsteady, aloof from teacher and comrades, more rarely and at the beginning of the phase destructive and hostile. With girls of more favoured social origin physical adolescence comes later; most girls in their thirteenth or fourteenth year are for a time in the negative phase. The end of the phase is indicated by an outbreak of letters, diaries, poems, and note-taking, when "Ich bin so traurig und weiss nicht warum" gives place to "ich sehne mich, ich weiss nicht wonach," the dominant note of the next, the Schwärmerei phase. In the case of boys there is less material available; symptoms are suppressed by the restraints of the schoolroom, and masked by entry into industrial life. The opportunity for observing them comes in voluntary after-school organizations. The same features are traceable as with girls, but between ages 14 and 16 discontent sometimes culminates in conflict with environment and unhappy family relationships. The phase ends off in friendship and in attraction to the other sex.

No. 3, March. ARTHUR FAULWASSER: *The educational import of early childish memories.* Some 1,560 recollections by 265 reporters yielded 100 cases educationally instructive to adults; among these punishment and misunderstanding of children and failure of adults to fulfil their promises are the largest counts. The difficult way to the child mind is illuminated by the indirect method of living memory not easily overvalued, and yet scientific pedagogy must be a little reserved in accepting this as a substitute for the exact method of direct inquiry. On the other hand, the German educational reform movements of the last decade, for example the Entschiedene Schulreformer, tend to view psychological experiment as unsatisfactory, and even immoral. This severe judgment is based on reverence for the child and a feeling that it is misused if treated merely as a means to an external aim, scientific knowledge. Here Immanuel Kant can be quoted in support: act so that humanity, both in your own person and in every other person, is always treated as purpose, never merely as a means.

In the same number ALOYS FISCHER: *Religious psychological methods of inquiry in the service of child research and education.* It is exactly the teacher who, being educator, is justified in exploring intimate questions where strangers have no right of entry. Fischer compares the relative values of quiet conversational questioning, and of documentary evidence for exploring the religious life; both methods are valuable, each has its special advantages and disadvantages.

No. 6, June. THEO HERRLE: *The psychology of the youth movement.* The youth movement is conditioned both by time and place. It has blossomed in Germany rather than in England, or America, because these latter countries had already evolved a way of life into which their young people could grow up. Jugend-bewegung, or the spontaneous movement of youth, must be read into contrast to Jugend-pflege, or movements for youth cherished under the leadership of elders. To-day -bewegung and -pflege are coming nearer to each other, indeed, the -bewegung necessarily acts as -pflege when enrolling younger members. The Wandervögel offer withdrawal into the quiet of nature and the feeling of freedom; they have no aim, the way is their aim. The freideutsche Jugend wish to shape life by their own decision on their own responsibility, and with inward truthfulness. This is the mental attitude of the young person awaking to self-consciousness. The Jugend-bewegung is a response to fundamental instincts.

H. BECKMANN: *A contribution to the grammatical development of literary performance at school age.* An attempt is made to determine the stage of development of the scholar as shown by composition, and to find some objective characteristic independent of the subjective judgment of the teacher. Some 600 productions coming from eight classes in a boys' elementary school were parsed and analysed into percentages of parts of speech and kinds of sentences used. One test was descriptive, based on a displayed picture of a village street in winter, the other narrative—write something about . . . (what you have yourselves experienced or seen). Description employs the present tense, narrative the imperfective. Abstract nouns and compound sentences are hardly used at first. Adverbs diminish, prepositions increase from year to year. Causal injunctions appear very slowly. The percentages indicate a transition, generally gradual, from childish speech to the literary language of the adult. Abstract nouns show a sharp rise about the sixth school year.

No. 9, September. WILHELM HENSS: *The problem of bi- and multilingualism and its importance for instruction and education in German frontier and foreign schools.* Forty references are given to reports from Poland, Denmark, Tschecko-Slovakia, China, India, Wales, Belgium, South Africa. The paper tends to remove the problem from the atmosphere of local political grievance and to treat it as a world educational problem

No. 11, November. KURT LEWIN: *Childish expression.* The author has used a cinema camera with sixteen exposures per second to study the attitudes and facial expressions of children. The samples reproduced are limited to four pages on account of cost. One series shows the faces of three children aged 4, 5, and 6, engaged in building castles of playing bricks. These show natural instinctive expression, not the artificial actor's expression familiar in the cinema; and just because the children are at play their expressions are unrestrained and even exaggerated. Children are easily misunderstood, hence the careful study of their expressions is desirable. For example, elders are too apt to mistake embarrassment for insolence.

No. 12, December. THEODOR VOSS: *The nature of child piety.* As a sample 120 elementary school children were taken from ten successive yearly age groups, six boys and six girls from each year. These were tested singly in personal conversation on such stimulus words as God, prayer, faith. Subordinate questions used were: Where is He? What does He do? What does He look like? How do we know that there is a God? With advancing years the evolution of ideas is marked, anthropomorphic at first, at last spiritual.

PUBLICATIONS ALSO RECEIVED.

ENGLISH.

A Treasury of Verse: selected by M. G. Edgar. (Harrap. Books 1—7. Pp. 63 each. 6d. each.)

Marlowe: The Tragical History of Doctor Faustus: edited by A. H. Sleight. (Cambridge University Press. Pp. 64. 1s. 9d.)

English for Interest: by Ben R. Gibbs. (Herbert Russell. Pp. 76. 1s. 6d.)

Ability Exercises in English: by A. C. Stevenson Ashmore. (Herbert Russell. Pp. 80. Cloth, 1s. 6d.; Manilla, 1s.)

School Certificate Composition: by A. E. Roberts. (Herbert Russell. Pp. 100. 1s. 6d.)

Test Examinations in English: by W. T. Williams and G. H. Vallin. (Methuen. Pp. 73. 1s. 3d.)

Précis Writing: by Guy Boas. (Longmans. Pp. xii+145. 2s. 6d.)

Clear Speaking and Good Reading: by Arthur Burrell. New Edition. (Longmans. Pp. xii+143. 3s. 6d.)

The Writing of English: by Guy Boas. (Longmans. Pp. viii+176. 2s. 6d.)

Introduction to the Reading of Shakespeare: by F. S. Boas. (Oxford University Press. Pp. 112. 2s. 6d.)

English Spelling, its Rules and Reasons: by W. A. Craigie. (Harrap. Pp. viii+215. 2s. 6d.)

Selections from Thomas Love Peacock: by H. F. B. Brett-Smith. (Methuen. Pp. xviii+206. 2s.)

The Lure of the Hills: An Anthology: selected by F. H. Lee. (Harrap. Pp. 252. 2s. 6d.)

Exercises in English Grammar: by A. A. Hughes. (Longmans. Pp. viii+88. 2s.)

An English Course for Secondary Schools: by Ernest J. Kenny. (University of London Press. Pp. xii+263. 3s. 6d.)

Ben Jonson: The Alchemist: edited by R. J. L. Kingsford. (Cambridge University Press. Pp. xiii+134. 2s. 6d.)

The Read-and-Do Books: by Eleanor Marriott. (Pupils' Books, 1 and 2: 7d. each. Teachers' do.: 1s. 6d. each.)

Plain Prose: by W. E. Williams. (Methuen. Pp. vii+184. 3s. 6d.)

A London Anthology: edited by Norman G. Brett-Jones. (Harrap. Pp. 268. 2s. 6d.)

A Practical Course of Précis Writing: by E. M. Palser. Book 1. (University of London Press. Pp. xviii+174. Cloth boards, 2s. 6d.; Limp, 2s. 3d.)

First Principles of Grammar: by W. E. C. Clarke. (Longmans. Pp. vii+134. 2s.)

Robert Browning: Balaustion's Adventure, including a Transcript from Euripides. (Macmillan. Pp. xxii+104. 1s. 9d.)

Izaak Walton: Lives of Donne and Herbert: edited by S. C. Roberts. (Cambridge University Press. Pp. xi+119. 2s. 6d.)

HISTORY.

Greek History for Young Readers : by Alice Zimmern. New Edition. (Longmans. Pp. xxiv+373. 5s.)

Readings in Roman Social History : by Alexander Duthie. (Harrap. Pp. 111. 1s. 6d.)

A Junior Ancient History : by A. M. Dale. (Methuen. Pp. viii+224. 3s. 6d.)

A Junior History of Europe : by D. K. Gordon. (Methuen. Pp. ix+182. 5s.)

The Cave Man's Legacy : by E. Hanbury Hankin. (Kegan Paul. Pp. 180. 5s.)

The Mediterranean World in Greek and Roman Times : by D. M. Vaughan. (Longmans. Pp. 224. 3s. 6d.)

FOREIGN LANGUAGES.

En Riant : by Frank A. Hedgcock. (Bell. Pp. 95. 2s.)

The Active French Course : by Frank A. Hedgcock. Third Year. (University of London Press. Pp. xii+187. 3s.)

Certificate French Composition : by W. R. Flex and Ch. H. Moulinier. (Longmans. Pp. 79. 2s.)

Cours de Français, with Phononomic Script : by H. V. Groves. (Methuen. Pp. ix+118. 2s. 6d.)

A Modern German Course : by J. Bithell and A. C. Dunstan. (Methuen. Pp. viii+168. 4s.)

Gustav Frenssen : Die Begegnung vorm Skagerrak : edited by W. R. P. Ridgway and M. Hannay. (Methuen. Pp. 64. 9d.)

Libro de los Ejemplos del conde Lucanor.
Al Margen de los Clasicos.
Los Cuatro Viajes de Cristobal Colon.
Cinco Escenas Matritenses.
(Longman's Spanish Texts : edited by Prof. W. J. Entwistle, M.A. 2s. each.)

Applied Spanish Grammar : by J. A. Vaeth. (Longmans. Pp. xi+275. 4s. 6d.)

Junior Latin Tests : by J. M. Milne. (Harrap. Pp. 96. 1s.)

Readings from Cæsar : by Alexander Duthie. (Harrap. Pp. 95. 1s. 6d.)

Easy Latin for Beginners : by R. E. Burns and A. E. Burns. (Methuen. Pp. xii+83. 2s. 6d.)

The Pirates, and three other Latin Plays on Cæsar's Life : by Harold Mattingly. (Methuen. Pp. vii+119. 2s. 6d.)

Readings from Horace : by Alexander Duthie. (Harrap. Pp. 103. 1s. 6d.)

Readings from Livy : by Alexander Duthie. (Harrap. Pp. 88. 1s. 6d.)

SCIENCE.

A First Biology : by S. Mangham and W. Rae Sherriffs. (Sidgwick and Jackson. Pp. ix+184. 2s. 6d.)

Experimental Science : by J. G. Frewin. Book 3. (Oxford University Press. Pp. 95. 1s. 6d.)

Intermediate Science : by D. Moncur and J. Thorburn. (Longmans. Pp. viii+275. 4s. 6d.)

Science for You : by J. G. Crowther. (Routledge. Pp. x+241. 5s.)

Practical Botany for Matriculation : by M. A. Shuttleworth. (University of London Press. Pp. xv+272. 5s.)

A Naturalist in the Great Lakes Region : by F. R. Downing. (Longmans. Pp. xxv+336. 10s. 6d.)

Our Wonderful Universe : by C. A. Chant. (Harrap. Pp. 191. 3s. 6d.)

Classified Problems in Physics : by D. B. Briggs. (Sidgwick and Jackson. Parts 1 and 2, pp. viii+128, 3s. each ; Part 3, pp. viii+183, 3s. 6d.)

MATHEMATICS.

Practical School Algebra : by C. V. Durell. (Bell and Sons. Pp. xii+320+lx. 4s. complete ; 4s. 6d. with answers.)

Classified Problems in Mathematics : by L. Herman. (Sidgwick and Jackson. Pp. viii+152. 3s.)

Qualitative Analysis : by W. Wardlaw and F. W. Pinkard. (Longmans. Pp. vii+166. 3s. 6d.)

Exercises in Arithmetic : by E. R. Pigrome. Part III. (Oxford University Press. Pp. 96. 1s.)

Bell's Everyday Arithmetics : by J. B. Thomson. (Bell and Sons. Teachers' Books, with answers : 1 and 2, 2s. each ; 3 and 4, 2s. 3d. each.)

Progressive Trigonometry, Part I : by E. G. W. Brown. (Macmillan. Pp. x+222. 3s. 6d.)

Arithmetical Dictation : by A. Wisdom. (University of London Press. Books V and VI. Pp. vii+47 each. 1s. 3d. each.)

GEOGRAPHY.

The Columbus Regional Geographies : by Leonard Brooks and Robert Finch. (University of London Press. Pp. 124 and 176. Book 1, 1s. 9d. ; Book 4, 2s. 3d.)

Stirlingshire : by W. Douglas Simpson.
South Lancashire : by A. Wilmore.
(Cambridge County Geographies. Cambridge University Press. Pp. 141 and 160. 3s. each.)

MISCELLANEOUS.

Six Craft Plays : by W. R. Cooper and A. Dunning. (Bell. Pp. vii+128. 1s. 6d.)

More Stories and How to Tell Them : by Elizabeth Clark. (University of London Press. Pp. 167. 3s. 6d.)

The Littlest One's Third Book : by Marion St. J. Webb. (Harrap. Pp. 57. 2s. 6d.)

A Short History of Shorthand : by J. A. Fraser. (William Hodge and Co. Pp. 21. 3d.)

The Place of Dionysos : by E. Westlake. (Pp. 24. 1s.)
Woodcraft : by Ernest Thompson Seton. (Pp. 12. 6d.)
Woodcraft Chivalry. (Pp. 20. 1s.)
(Published by The Order of Woodcraft Chivalry, Godshill, Salisbury.)

Stories of Adventure and Discovery : by A. M. Margials. (Harrap. Pp. 254. 3s. 6d.)

Nature Myths to Tell : by F. Holbrook and F. J. Farmer. (Harrap. Pp. 248. 3s. 6d.)

The Training College Bulletin

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TRAINING COLLEGE ASSOCIATION
by
The SECRETARY and Lt.-Col. W. J. DOUGLAS,
Saltley College, Birmingham.

No. 17 — *JUNE*, 1928

SECRETARY'S NOTES.

The Council has met on February 25th and May 12th. The progress of local schemes between the training colleges and universities and the work of the Central Committee has been reported and watched. The full report of the Central Committee has now been presented to the Conference and adopted, and a note on it is included in this issue of the BULLETIN.

The Hadow Report has been under consideration, and two Committees have been set up to report on it from the point of view of the men's and women's training colleges respectively. These Committees have met separately, using a memorandum on the Hadow Report drawn up by Mr. Welpton as the basis of their deliberations. A joint report will be made to the Council in June.

Following up the January Conference the Council has kept in touch with the Association of Directors and Secretaries. A meeting was held with representatives of their Executive in March, when the discussion centred upon the curriculum suitable in the two-year training college for the intending teacher of children up to 11+. This discussion is to be continued shortly, it is hoped, in a further meeting, and as a preliminary step a statement is being drawn up by Mr. Raymont, Miss Mercier, and Mr. Pickles (Director of Education for Burnley, and President of the Association of Directors and Secretaries), in which it is hoped to arrive at some common grounds of agreement. Meanwhile, the Council regard the discussions as valuable in that the training college point of view is being kept before the Directors and Secretaries.

The Committee on the Memorandum on English which meets in Leeds, continues its work, and its report will be made later.

The Religious Education Committee has been working on a report on syllabuses at present in use in schools. This report is now completed and will be presented to the Council in June, but meanwhile the Council have authorized its being put before the Archbishops' Commission. The list of hymns and prayers for little children has been taken up by the Students' Christian Movement, who will publish it very shortly as a 1d. leaflet. It is thought by the Council that this should prove a useful possession for students leaving college and for old students. Specimen copies will be sent, as soon as they are received, to all colleges, and further copies may be obtained at 1d. each from the Secretary, T.C.A., Whitelands College, S.W.3 (or from the Students' Movement). The Council would be glad if they were bought through the T.C.A. in order that some idea may be gained of the demand for the list.

The Conditions of Service Committee have had several cases under consideration which have now reached satisfactory conclusions. The Channel Islands and the Isle of Man are now under reciprocal superannuation schemes which will favourably affect any T.C.A. members with past service there. One such case has just been before the Committee. The closing down of the Manchester City Training College at the end of the present term is a matter of grave concern to the Association. The propriety of the action of the Manchester Education Authority is not called into question, but a communication has been sent from the T.C.A. to the Director of Education urging the gravity of the position for some of our members and expressing the hope that nothing will be left undone by the authority to secure posts for any of the staff who may find themselves without appointments on August 1st.

The Council has been in communication with the British Social Hygiene Council, and attention is drawn to the note inserted in this issue by Miss Ponsonby, General Convener of the Hygiene Section, in regard to the summer course at Cambridge. The B.S.H.C. also send lecturers and a film to any college that desires it. A note on this is also included in this issue.

A paper by Miss Allan, on "Rural Schools," which was unavoidably held over from the last issue of the BULLETIN is included now. In connection with this subject a meeting of the Joint Committee with the Head Mistresses' Association was held in March, when Miss Allan explained the scheme adopted by the Board's Committee for an alternative examination to the school certificate as set out in Circular 1394.

Further Council Meetings will be held this year in London on June 23rd and October 13th, and, at the invitation of the North-Western Branch, in Liverpool on November 19th.

K. B. ANDERSON.

GENERAL SECTION CONVENERS, 1928.

Art:
Mrs. Found (Furzedown).

Domestic Subjects:
Miss Weldhen, National Society's T.C., Fortune Green Road, N.W.6.

English:
Dr. Parsons (Hull Municipal).

French:
Miss Thomson (Derby).

Geography:
Miss E. W. Jones (Warrington).

Handwork and Needlework:
Miss Slight (Saffron Walden).

History:
Dr. Firth (Furzedown).

Hygiene and Physical Training:
Miss Ponsonby (Manchester City).

Mathematics:
Mr. E. Hamilton (Bangor Univ.).

Music:
Miss Spalding (Avery Hill).

Psychology and Philosophy:
Miss Phillips (Homerton).

Science:
Mr. H. W. Jarman (Winchester).

REPORT ON TRAINING COLLEGES AND UNIVERSITIES.

The Conference on Training Colleges and Universities met on Thursday, May 3rd, at the Board of Education. Lord Eustace Percy was in the chair.

The T.C.A. and C. of P. representatives were the same as at former meetings, except that Miss Hartle kindly stood down in favour of Mr. Rayment, and Miss Mercier took Miss Spalding's place.

The Conference was summoned for the purpose of adopting the report of the Committee, the main purport of which was as follows :—

The Committee was constituted in February, 1926, " to consider in what way co-operation between universities and training colleges can best be effected." In view of the terms of Circular 1372 the Committee had, as a matter of practical politics, confined its attention to the examinational side of the matter, its principal task being to lay the foundations as quickly as possible for a new examination to replace that conducted by the Board. The value of local connection seemed to outweigh the merits of any central scheme and the regional basis had been adopted, a provisional grouping being drafted and local conferences set on foot.

It was not found possible to include the Universities of Oxford and Cambridge in the scheme, the latter omission being the more serious in that it created the problem of grouping the Eastern colleges, with no natural centre.

The University Colleges of Exeter, Southampton, and Nottingham were ranked for the purpose as universities.

By September, 1926, it became clear that local negotiations were not sufficiently advanced for a final report to be made to the Conference in October, and accordingly an interim report was made. One of the main points of this report was the need for further time in which to complete the negotiations, and in answer to this the Board expressed willingness to continue its examination in 1928 and also in 1929 if they were assured that local negotiations were being carried on as speedily as possible, and that the new examination would begin not later than 1930. As local negotiations progressed the question of the scrutinization of schemes came before the Committee. It became clear that if the Board were asked to delay giving its approval to the several schemes until they had been scrutinized and approved by the Committee, and by other bodies interested, prolonged delay would be occasioned in bringing the schemes into operation. The better course appeared to be to regard all schemes as experimental in the first instance, and to provide for their review after they had been working for a short period. The Board, therefore, agreed to give provisional approval to the schemes, and to circulate them to the bodies interested during the provisional period.

Progress up to the present date.

A.—Areas for which schemes have been provisionally approved by the Board :—

NORTHERN AREA :
University of Durham.

YORKSHIRE AREA :
Universities of Leeds and Sheffield.

MIDLANDS AREA :
University of Birmingham.

NOTTS AND DERBY AREA :
Nottingham University College.

WESTERN AREA :
University of Bristol.

LONDON AREA :
University of London.

SOUTHERN AREA (Reading Group) :
University of Reading.

B.—Areas for which schemes have been submitted to the Board but have not yet been approved :—

SOUTHERN AREA (Southampton Group)
Southampton University College.

SOUTH-WESTERN AREA :
Exeter University College.

C.—Area for which schemes have not yet been submitted to the Board :—

WELSH AREA :
University of Wales.

LANCASHIRE AND CHESHIRE AREA :
Universities of Liverpool and Manchester.

EASTERN AREA.

SPECIAL ARRANGEMENTS.

Special arrangements were necessitated in the case of certain colleges.

(*a*) **In the London Area** certain colleges lie outside the scheme. Goldsmiths' College, which is owned and controlled by the university and has in the past had special arrangements made for its examination, will continue to be examined in this manner.

The Froebel and Maria Grey training colleges will continue to take the Froebel examination, and the Shoreditch Technical Institute and the Norwood College for the Blind are considered by the university to be of so specialized a character that it could not usefully co-operate in their examination.

(*b*) **In the Eastern Area** Cambridge University has agreed to make special arrangements for Homerton College through its Local Examinations Syndicate. The Committee understands that Norwich and Bishop's Stortford Training Colleges have applied for admission to the Nottingham University College Group, and Peterborough to the Birmingham Group. Bedford Kindergarten College may continue to be examined by the National Froebel Union, and it is hoped that this body will also examine Saffron Walden.

A Central Advisory Committee.

It would, in the view of the Committee, contribute very much to the efficient working of the new system if a meeting-ground could be provided where the spokesmen of the various parties whose co-operation is essential could come together from time to time to compare views and discuss difficulties. They accordingly recommended that the Board should appoint a Central Advisory Committee for the certification of teachers, which should be representative of the bodies and interests chiefly concerned in the training and recognition of teachers, and that it should be the business of this Committee to maintain a general survey over the examinations instituted under Circular 1372 and to advise the Board upon questions arising thereon. They suggested that such a Committee might suitably be constituted by assigning representatives as follows :

	Representatives
Universities and University Colleges	8
Local Education Authorities. .	4
Governing Bodies of non-University Training Colleges	4
Teaching Staffs of Training Colleges	4
Teachers as a whole	4

The method of nomination of the representatives of the universities will need to be considered in consultation with persons who can speak for the universities.

With regard to the representatives of the other bodies we make the following suggestions :—

(*a*) The representatives of the local education authorities should be nominated :—

1 by the Association of Education Committees.

1 by the County Councils Association.

1 by the Association of Municipal Corporations.

1 by the London County Council.

(*b*) The representatives of the governing bodies of non-university training colleges should be nominated as follows :—

1 person representing the municipal and county training colleges, to be nominated by the local education authorities providing training colleges.

1 person representing the Church of England training colleges, to be nominated by the Board of Supervision of Church of England training colleges.

1 person representing the Roman Catholic training colleges, to be nominated by the Catholic Education Council.

1 person representing the other non-university training colleges to be nominated by the governing bodies of those colleges.

(*c*) The representatives of the teaching staffs of training colleges should be nominated by the Joint Standing Committee of the Training College Association and the Council of Training College Principals.

(*d*) The representatives of the teachers should be nominated by the Teachers Registration Council.

They did not contemplate that officers of the Board would be appointed as members of the Committee. They hoped that the Committee would act throughout in close co-operation with the Board and its officers, but it would probably be most in keeping with the Board's usual practice that this co-operation should be effected by the attendance of the Board's officers at the meetings of the Committee as assessors with the right to speak but not to vote. They suggested, however, that the Board should be asked in appointing the Committee to reserve to themselves discretion to make any addition to its membership which they might at any time think desirable. This would enable them to provide for the representation on the Committee of any point of view or experience which might seem to them to be not sufficiently represented among the nominated members, and we suggest that in exercising this discretion the Board should arrange for some representation to be given to any area not already represented.

The Chairman of the Committee should be appointed by the Board. We hope that the Board would be willing to provide accommodation and secretarial and clerical assistance for the Committee and to undertake financial responsibility for the travelling expenses and subsistence of its members.

Outstanding Problems on which Committee Might Advise.

The report does not attempt to make detailed recommendations as to the way in which the Central Advisory Committee should discharge its functions. This is a matter which can be more suitably considered by that Committee and by the Board in the light of later experience. It is pointed out here, however, that the change now being instituted is bound to give rise to a number of difficult questions, and that these will call for a large amount of consultation between the Board and the various other bodies concerned, in connection with which the proposed Advisory Committee might play a helpful part. Some of these questions may be briefly indicated :—

" (*a*) The first is the question of standard. The maintenance of an adequate minimum standard for the certificate will be a matter essential to the success of the new system, and unless this can be secured the other advantages which the change will offer would be obtained at too high a price. This can, no doubt, be taken as common ground. It may, indeed, be argued that it is for that reason unnecessary to labour the point : that all parties concerned will realize fully its importance, that the universities in particular will contribute to the new system a long experience of examination work, and that the question of standard may thus be left to look after itself. It would not, however, be safe to under-estimate the complexity of the problem. What we are concerned with here is not a standard such as that for a university degree, which has behind it a long tradition well understood both by the universities and by the public, but a standard designed for a special purpose, the responsibility for which has hitherto been in the hands of the Board alone. To preserve the continuity of this standard during the transition from the old to the new system, it will be necessary for the new examining bodies to keep in close touch with the Board, and to ensure a reasonable equivalence of standard in the future it will be necessary for them to keep in touch both with the Board and with one another. It should be remembered, too, as has been suggested above, that if the new certificates are all to have a national currency, they must not merely reach an adequate standard in fact, but must be able to satisfy public opinion that they reach it.

" (*b*) Hardly less important than the question of standard is the question of the scope and range of the examinations. Clearly the greater the number of alternative syllabuses becomes and the more the responsibility for framing alternatives passes into the hand of a number of separate bodies, the greater will be the need for opportunities for consultation on this subject.

" (*c*) It has been suggested above that the schemes for examination arrangements should come up for reconsideration at the end of a period of provisional approval. For the reasons explained in the earlier part of this report these schemes were drawn up independently in the different areas, without any pressure on the Committee's part towards uniformity, and to a large extent without knowledge in one area of what was being done elsewhere. It is only to be expected in these circumstances that they should show, as they do, great divergencies of procedure. In some cases the responsibility for the examination is undertaken by a university delegacy, with a majority of university representatives; in others by a joint committee, on which university representatives are in a minority. In some cases the certificate will be given by a university, in others it will not. There are wide varieties of practice in such matters as the number, size, composition, and powers of the various Committees or Boards which are to manage the details of the work in the different areas, and as to the method of appointment and the respective functions of the internal and external examiners. A wide freedom of experiment in these matters was in our view indispensable at the outset, and we are far from saying that general uniformity will be desirable or practicable even at the end of the period of provisional approval. But it seems very possible that experience may show that some of the arrangements which have been provisionally adopted work better than others, and here again the proposed Central Advisory Committee would afford a convenient means by which this experience could be compared and discussed."

Co-operation of the Board's Officers.

The Committee felt that particularly in the first years of the new schemes the assistance of the Board's officers would be almost essential to the successful working of the schemes and to the setting up of a consistent standard. They noticed that in all schemes submitted to the Board some provision was made for the participation of the Board's officers. As there was some doubt as to the degree in which such services would be available the Committee approached the Board, receiving the reply that there would be no objection to the Board's officers giving active assistance to the new examining bodies, as well as to the Central Advisory Committee if established.

Board's Inspection.

There was some doubt as to the continuance of the Board's inspection under the new system. The Committee approached the Board on the matter and learnt that the Board will continue to satisfy themselves by inspection of the efficiency of the training colleges which they recognize as providing approved courses of training leading up to the Teachers' Certificate.

Testing of Practical Subjects.

The Committee had considered the question of the examination of those subjects which have hitherto been tested practically by the Board's inspectors. The Board had been approached on the subject and given the following reply :—

> "The Board will in all cases retain responsibility for the testing of students in practical teaching. They will also, where they are so desired by an examining body, continue to examine in the so-called practical subjects by means of their present system of testing by inspection, at any rate until the examining bodies, after entering on their functions, have had full opportunity of investigating the problem in consultation with the Board."

In regard to marking it is understood that the marks shall be communicated to the examining boards, who shall take them into account in determining the examination results. Failure to reach a minimum standard in this subject should involve failure in the examination as a whole.

Physical Training.

For the reason that the new examining bodies will probably find difficulty in obtaining the services of skilled examiners in this subject, while the Board has at its disposal a staff of inspectors specially qualified in the subject, the Committee recommend that the test in physical training should continue to rest with the Board's inspectors. The same procedure would be suitable as in practical teaching except that failure will not involve failure in the whole examination.

Advanced Handwork.

For similar reasons advanced handwork for men, the credit mark carrying with it the qualification of teacher of handicraft, should be retained for the present under the examination of the Board's inspectors.

The Committee recommend, however, that the assistance of the Board's officers in the testing of the so-called practical subjects (other than practical teaching) should only be sought until arrangements can satisfactorily be made for including them in the local examination. In the view of the Committee as large a part of the curriculum as possible should be included in the examination as a whole.

On this account the Committee hope that it will be possible for the domestic science colleges to be included satisfactorily in the local schemes, though they recommend the assistance of the Board's officers where it is desired at present.

Re-examination of Students.

The question of re-examination of students has been before the Committee, who recommend :—

"(*a*) That the new examining bodies should for the present continue the Board's practice of granting two chances of re-examination to students who fail at their final examination, it being left to the discretion of the examining body to decide whether the student should be re-examined in the whole examination or in part only.

"(*b*) That they should afford facilities in 1930 and 1931 for the re-examination of students who fail at the last examinations conducted by the Board.

"It seems to us reasonable that the cost of the re-examination of the students referred to under (*b*) should not fall either on the new examining bodies or on the students themselves (who will have entered college in the expectation that they would under the Board's old practice be elegible for re-examination without payment of a fee). We communicated with the Board on the matter, and have been informed that they agree in principle with this view, and that the precise arrangements for meeting this expenditure will be a matter for further consideration."

Finance.

It was made clear to the Committee by representatives of universities, local education authorities, and governing bodies of training colleges that an essential condition of their participation in the schemes was that they were not called upon to bear any additional financial burden.

The Board had offered to pay half the cost of the examination, the other half being borne by the candidate, subject on the Board's part to an over-riding maximum of 30s.

Estimates had been drawn up and London and other universities were of considered opinion that the cost of the examination would be £4 a head. This meant an examination fee of £2 10s. 0d. payable by the candidate.

Representations had been made to the Board by the Committee, but a reply had been received that the Board did not see their way to raise beyond 30s. the limit of their direct grant towards meeting the cost of the new examinations. Where, however, local education authorities pay the fees of necessitous students this will be recognized for grant.

A further general recommendation was by the Committee that during the first years of the working of the schemes, when they may all be regarded as provisional and tentative, no abrupt departure should be made from the general scope and standard of the existing examination syllabuses, and that sweeping changes should be deferred until the new examining bodies have had time to become familiar with the machinery of the examination work and for the value of the new certificates to be realized.

At the Conference the question of finance was again raised. Lord Eustace Percy made it clear that for the present the Board would not go beyond the 30s. limit, but that the position should be watched. If hardship resulted to the students he was willing to reconsider the matter. He signified that, with this point clear, the Board were willing to adopt the report as it stood. After some discussion on points of detail and some minor amendments the report was adopted by the Conference.

K.B.A.

COLLEGE NOTES.

Whitelands College has set itself the task of raising £7,500 for the college chapel, which is to be erected on the new site at West Hill, Putney.

The new Whitelands will stand on a freehold site of twelve acres, within a few minutes of Putney Heath and Wimbledon Common.

Plans for the buildings, including the chapel, have been prepared by Sir Giles Gilbert Scott, and it is expected that the move will take place in 1930.

NOTE FROM THE GENERAL CONVENER OF THE HYGIENE SECTION.

The British Social Hygiene Council have arranged a summer school at Cambridge from July 26th to August 2nd. The aim of the summer school is to present the scientific foundations of social hygiene. The programme will cover instructional courses in the biological sciences, together with discussion lectures on the practical application of the principles of social hygiene to current educational and social problems.

The lecturers will include :

Mr. Ward Cutler,
Professor Heath,
Professor Winifred Cullis.
Dr. Feldman.
Dr. Crichton Miller.
Dr. Letitia Fairfield,
Mr. E. B. Turner,
Col. L. W. Harrison,
Dr. Margaret Rorke.

Charge for accommodation for the week will be £3 10s. 0d. Fees, £1 1s. 0d.

F. Ponsonby.

BRITISH SOCIAL HYGIENE COUNCIL (Incorporated).

(*The following note, supplied by the Secretary of the B.S.H.C., is included in this issue by the authorization of the T.C.A. Council.*—Eds.)

There are few teachers who are not at some time or other brought up against problems relating to sex. Questions as to the origins of life or the moral code crop up in class which, unless the teachers are equipped with knowledge, they find difficulty in handling. Even more necessary is full knowledge if the difficulties and questions of individual pupils are to be met in a helpful and constructive manner. For this reason the British Social Hygiene Council is frequently asked to arrange one or more lectures —usually to second-year students only—on social hygiene, such lectures being illustrated by the films : " The Gift of Life," or " Youth and Life." The Council provides competent lecturers and the attention shown and the thoughtful questions asked testify to the deep interest aroused. Where time allows a course of three or four lectures is advocated, and in this case one may be devoted to the specifically medical aspect of the subject and some account given of treatment facilities and other methods of combating disease.

These lectures are offered free to all colleges within the London area, the grant received by the Council from the London County Council covering their cost. Colleges in the provinces may obtain a grant towards expenses from the county or county borough in which they are situated unless they prefer to make their own financial arrangements.

It is highly desirable that principals of colleges and members of their staffs should see the films before they are presented to the students. Special showings can always be arranged at Carteret House.

All further particulars may be obtained on application to the Secretary, British Social Hygiene Council, Carteret House, Carteret Street, S.W.1.

TEACHERS IN RURAL SCHOOLS.

A Paper read by Miss M. M. Allan in January, 1928.

The times are still critical for rural education as they were when Circular 1365 was published.

Under the Act of 1921 developments have already taken place and schemes are being prepared which are likely to have a permanent influence on organization and character of rural education. Many of these developments have as their aim the establishment of central schools drawing the bulk of their pupils from the surrounding villages, and in such it is possible to arrange a progressive course of post primary instruction extending over at least three years and more usually four years. The appropriate staff for these new central schools and, no less, that for the decapitated junior schools from which the senior scholars have been or may be withdrawn, is a matter of urgent importance and of no little difficulty on which the trainers and employers of teachers do well to take counsel together.

Junior Schools.

Perhaps the junior schools should first be considered, as there seems a grave danger that their very great importance may be overlooked in the face of the greater attention not unnaturally bestowed, at least for the moment, on the newer type of senior school. As the case for the new central schools has been pleaded on education committees, one has listened with foreboding to the common argument that their introduction would lead to a saving on the staffing of the junior schools. To a certain degree a commendable economy may result, but can we wisely reduce expenditure on schools in which still nearly all the children under eight years of age receive their training from supplementary teachers, of whom over 9,000 (or nearly one-fifth of the total rural teaching establishment) are employed? These supplementary teachers are by definition "suitable women who are specially approved by the inspector for their capacity in teaching." A certain amount of evidence is forthcoming in their support. Their success it is said is often greater than might be predicted. Those who are young enough to be active and enterprising, do their work remarkably well. Cheerfulness, patience, industry, deftness, a quick eye, and ingenuity are, after all, part of the equipment of an efficient kindergarten teacher. And yet we all know that good as they may be here even shown to be, practically none is employed by the urban authorities, so that obviously their retention is wholly due to the dearth of teachers and intending teachers in village communities, and to the desire to reduce the admittedly high cost of small schools.

It is, however, too dangerous to give the care of the youngest children to that member of the village community who from home circumstances, or from lack of initiative, has been unable to seek employment further afield. (The younger the child the greater need for the highly trained teacher the whole new psychology asserts.) We, employers and trainers alike, must therefore stand for the policy of urging the Board of Education to exercise their right to refuse recognition to this entire class of teachers at the earliest possible date. Further, we would urge local education authorities now and for so long as supplementary teachers are employed to appoint peripatetic kindergarten organizers, as is done with such good effect in other subjects—e.g., physical training. This has already been done in one county, and the result has been most marked. Uncertificated teachers, though they have proved themselves to have reached a certain standard of scholarship, must rely for success on much the same qualities as those of good supplementary teachers. Many of these, too, are credited on all hands with good work. Economically, they may be a necessity in junior schools for some years yet. As educationalists, however, we deplore it, but surely they must get more help. Many of them long to train, many save and save and present themselves when over thirty years of age as candidates for training colleges. Thirty is too late. Would it not be possible *now* to appoint uncertificated teachers only on a limited tenure, say, for eight years (18 to 26), giving them during these years easy conditions of training? Would this interfere too greatly with the supply?

It should be noted that the "beheading" of these small schools leaves them still with as full an education to provide as was required of them under the system of 1870, and for thirty years afterwards. Then the children left at 11 to 12 for employment, now they leave at the same age for the senior school; that is all. Hence the value of the school to the village is as great as ever, and the importance of the personality of the head to the village community is as great as ever. A village it is said loses caste when there is no school in it, so in part it feels it loses caste when it is left with only a junior school. Some dull realization of this may be at the back of the opposition made by the parents against sending their senior children out of the village to a neighbouring school, an opposition generally happily overcome by the tact and patience of the education authority. Will the head of the junior rural school be more commonly, under the new conditions, than in the past, a woman?

In these junior schools then we find that more than half the staff never reaches a training college, and that the training college can only affect the situation if called upon to co-operate with the local education authority in short courses, Saturday classes, and the like. Speaking of the remote rural schools the product of the training colleges appears as head teacher, not direct from college but after considerable experience.

The Senior Classes and Central Schools.

Turning to a consideration of the new central schools (generally non-selective in the rural districts), we find the daily clearer recognition that, apart from the proposed raising of the school leaving age to 15, the age has already been raised beyond the capacity of the smaller village schools to deal with the increased school attendance adequately. The mere abolition of exemptions before fourteen years of age has, in one county, increased the attendance of children between thirteen and fifteen from 2,035 to 4,735 in five years—more than double. Hence the activity all around us in the organization of children over eleven into schools entirely for them, or at the top of schools admitting also younger children.

I do not think the social significance of these new rural central schools can be over-estimated. England so far has failed to evolve anything of the nature of the consolidated schools of the country districts of the United States, or of the peoples' high schools of rural Denmark. In Scotland the value set by the Scotch labourer on education has been put down to many causes, but is surely due among other things to the fact that learning, real learning, in Scotland comes to the villager in the village. A chance—a great chance to educationally irrigate the rural districts, to decentralize education in England is now given. The whole of that Section 10 of the 1918 Act is a new charter, bringing post primary education and the vitality of advanced instruction into country places instead of drawing country aspirants for them into the life of the towns, will be one great step towards reconstructing rural life.

The incidence of the Burnham Scales will never attract the best teachers to the country districts. Until the salary scales are national and there is but one scale outside of London (which is not at the moment a practical proposition), rural posts will not be economically desirable. Perhaps this is not altogether an evil, because it does not follow that the posts will therefore attract only those who have failed to get more highly paid appointments in the towns, or whose physical inefficiency makes life in the country a necessity. There is still a number of country lovers who will choose country life, and will be the more encouraged in the future to choose it because of the amelioration of the social amenities through better transport, wireless broadcasting, rural libraries, etc., etc., and, further, because of the better conditions of work in the reorganized schools. While it is true that country lovers are found both in the towns and in the country, there is much evidence that we have been too careless in recruiting for our colleges the truly rural candidate. Our general rule is to recruit our candidates from the sixth forms of secondary schools, from amongst pupils who have secured the higher certificate, or, perhaps even better, followed in the sixth form a course including much more art and craft work as in Kent, where post first school certificate courses have been brought much nearer the needs of the intending teacher. Much care has been taken to bring the rural candidate to these secondary schools. Hostels have been built and more are planned to secure the attendance from the remote districts, but when all this has been done out of 2,000 candidates who took the last post-college examination, 1,800 had attended no secondary school. The evidence that many of these young teachers are highly desirable candidates for the teaching profession seems as clear as that up to the present they largely fail to enter college.

This is an important question, and highly contentious. Many serious students of the question wish to see all such candidates early brought to the secondary schools, and there not specialized in any way for country service, while others desire to see them given an education specialized with a rural bias, not only in agricultural science, but affecting the teaching of every subject in the curriculum.

The new alternative first examination just introduced to take the place of the post-college, recognizes this difference of opinion. Candidates may secure this certificate either on courses which qualify for matriculation or by a selection of subjects which requires no second language, substituting more practical subjects. In the meantime, this certificate is not open to secondary school pupils, but may be open to the new central schools.

I submit there seems no good reason at this early pre-college stage to specialize with a rural bias the education of the intending teacher. For urban as well as rural candidates science, I submit, ought to be biological rather than physical. Geography should be regional; history, social and local; and arithmetic have to do with everyday life. These rural candidates are now one in five of the number of intending teachers, but only one in eight of those entering college. This should be altered by the reservation of places for them—but reserved where ?

With regard to their further training, some have maintained that the present training colleges as we know them are "urbanized," and not calculated to produce apt teachers for a rural environment. Therefore, it has been advocated that certain training colleges should be asked to provide training courses with a rural bias, and that such segregation is not disadvantageous. I would submit that specialization of this kind is not desirable.

In women's colleges the present two-year course, with its gardening, housecraft, crafts, drawing, music, including folk and national song, and physical training and folk dancing, should easily be able to provide options suitable. The four-years course is not so easily adapted to the training of children under eleven, while in the men's colleges, dominated as they are by degree courses, the rural course, it is said, would be apt to form a soft option which would not attract the best men. Surely there is much to be gained by training town and rural teachers together at this stage. The urban student needs to be reminded that all our industrial roots are in the land and the rural student wants to be vitalized by the contact with the culture of our great communities. Let us train both with a high sense of the place of the environment, whether rural or urban, in the training of the child, and with a clear admission that the staff of a rural school must between them be able to teach the elements of all the subjects in the school curriculum. There is at the moment much concern about teachers in rural schools not having the proper qualifications for the work. The blame is not easily apportioned, and may arise more from the paucity of any candidates than the too-specialized training of some. The difficulty would be greatly helped if teachers entering the service of an authority were more carefully allocated to the work for which they have been trained. Recently too many (especially men) trained for senior work have accepted posts in junior schools, and have been found wanting. There is evidence that more have been trained for senior work than can be absorbed.

While pleading for training the urban and rural teacher together in what may be called their first normal training course, I wish to emphasize the importance of post-college specialized training courses for all teachers. It has been far too long the case that the teacher teaches all his life long on a qualification gained when he is twenty-one.

An excellent beginning has been made with such courses; selected head teachers have greatly enjoyed and profited from the excellent short courses in rural science organized by the Board of Education. Week-ends have been spent with the horticultural and agricultural organizers. Universities like Reading are already equipped to lend much help. But all this activity should be increased so that not only carefully-selected individuals but the rank and file are stimulated to seek the special knowledge of the environment in which they find themselves at their work. You do not secure an efficient rural teacher by introducing the young aspirant to agricultural science, but you immensely increase the vitality and encourage and inspire the practising, acting, responsible teacher, arranging for his attendance at times which do not encroach too much on his vacations at courses on rural science, practical geography, manual work, horticulture, surveying, bee-keeping, poultry-keeping, etc. The County Council being also the authority for agricultural education, there can be close co-operation with the experts in rural activities now appointed in so many counties. Acting teachers so inclined will also find the great advance in adult education in the villages a great help. Folk dancing, music, crafts, studies in the League of Nations are already introduced by the W.E.A., Women's Institutes, and other organizations. I doubt if any capital expended in the country to-day would secure a greater return than money spent with wisdom on what may be described as the after-care of the teacher in post training college courses.

BRANCH REPORTS, 1927.

North-Western.

Officers :

Chairman	Miss Green (Sedgley Park).
Vice-Chairman	Mr. Hamilton (Bangor Univ.).
Secretary	Miss Fisher (Edge Hill).
Treasurer	Miss Jenkins (Edge Hill).

Three meetings have been held during the year, viz., at Sedgley Park College, November 13th, 1926 ; at Edge Hill College, March 5th, 1927, and at the University College, Bangor, on May 28th, 1927.

At the first meeting twenty-six, at the second twenty-three, and at the third thirty members were present.

At the first meeting the proposed connection between the universities and the training colleges was discussed. Miss Clark, Manchester University, gave an account of some aspects of Health Education in America.

At the second meeting a short history of the preparations made in this part of England for the proposed new Examining Board was presented by Miss Smith, Edge Hill. A preliminary enquiry as to how far training colleges of the Branch encouraged students to belong to the League of Nations Unions was made by Miss Fisher, Edge Hill, and a paper strongly recommending the teaching of biology in school was read by Miss Ponsonby, City of Manchester Training College. The motion " That the North-Western Branch strongly recommend that the teaching of biology should be encouraged in schools " was carried. A paper on " Educational Psychology in Training Colleges," contributed by Mr. Hamilton, was read.

At the third meeting the result of a further enquiry *re* membership of the League of Nations Union in Training Colleges was reported by Miss Fisher, who also read an account, contributed by Miss Hardy, Edge Hill, of the Edge Hill College Branch of the League of Nations Union. The results of the mental tests set to students in colleges were reported by Mr. Hamilton, and the progress made towards the formation of the new Examining Body was reported by the Chairman.

The proposal to hold a conference in London between the Local Education Authorities and the Training College Association was discussed and received unanimous approval.

Professor Garstang, Professor of Zoology at Leeds University, addressed the meeting on the subject of biology and education.

North-Eastern.

Officers :

Chairman	Miss May.
Vice-Chairman	Professor Frank Smith.
Ex-Chairman	Mr. E. J. G. Bradford.
Secretary and Treasurer	Miss F. G. Moss.

Three meetings of the Branch have been held since the last report was made.

The first meeting was on November 13th, 1926, at the City of Leeds Training College.

A brief summary of the progress made by the Board of Education Committee on Training Colleges and Universities gave rise to considerable discussion.

The meeting was strongly of opinion that the principles of freedom emphasized in previous discussions relating to the question of the examination of students in training colleges should be reaffirmed: That training colleges should be free to draw up their own schemes and that they should be free to conduct their own internal examinations in co-operation with the universities.

The spring meeting was held on March 5th, 1927, at St. John's College, York.

Reports on the developments of proceedings relating to the association of universities and training colleges were given by Miss May for Area I, and by Miss Spalding for Area II General discussion followed.

On June 25th the Branch held its summer meeting at the Municipal Training College, Hull.

Further reports were given from Areas I and II on the developments connected with the association of universities and training colleges.

At the close of the business meeting Professor A. E. Morgan, M.A., Principal-elect of Hull University College, gave a most interesting address, his subject being "Education in a Changing Age."

Two meetings of the Education Committee of the Branch have been held during the year. On March 5th, 1927, at St. John's College, York, Dr. Parsons opened a discussion on "The best lines for the future development of Course C and its relationship to Course B, especially with regard to the curriculum under the new conditions of association of training colleges with universities," and at the meeting at the Municipal Training College, Hull, on June 25th, 1927, Mr. Bradford, Sheffield University, read a paper on "A professional year as a first step to a two-year course."

Midland.

The Midland Branch met three times during the year. The main topics discussed were "Some Problems involved in the New Examination Schemes," "Rural Teachers," "The Training College Curriculum," and "The First Years of a Teacher's Life after leaving College." Data bearing on this latter problem were collected by the Branch and forwarded to Mr. Raymont for use if required at the Conference.

Many Branch Sections met, and useful discussions took place.

The Treasurer reports that the balance in hand has decreased, but in spite of that the Branch reduced its demands from the Association to less than half the amount allowed.

Eastern.

During the year the attention of the Branch has been chiefly directed towards finding some solution of the examination problem.

In the spring term the lecturers in the respective academic subjects met together in groups to compare standards and discuss the possibility of common syllabuses.

A summer meeting was held on June 24th, when the results of these meetings were reported.

At this meeting Miss Allan reported that the request for examination had been laid before the Extra-mural Board of Examiners for Cambridge University, and by their recommendation it should go direct to the Senate.

Other matters discussed at this meeting were the formation of the psychological section and the difficulties of staffing the rural schools.

The annual business meeting was held on November 12th.

Miss Allan reported that the Cambridge University had refused to take up the regional scheme as suggested by Mr. Meyer's Committee.

Under these conditions it was necessary for the group to break up, and each college is now carrying out its own negotiations. It is hoped that early in the Lent Term considerable progress may be reported.

At this meeting there was also a full discussion of the syllabus drawn up by the Psychological Section.

Southern.

The summer meeting was held at Oxford in the Training Department of the University, by the courtesy of Mr. F. J. Hendy.

The Director of Education, Mr. Willson, gave an address on "Some Problems of Rural Schools," which has been published in full in the November issue of *The Forum of Education.*

Members met for lunch, at which Mr. Willson and Mr. Hendy were their guests. A delightful afternoon was spent visiting typical parts of fourteenth, fifteenth, and seventeenth century Oxford under the guidance of Mr. Icely, after which the members were entertained to tea by Mr. Hendy and Dr. Keatinge, thus ending a very happy day.

The autumn meeting was held at the College of St. Mark and St. John, Chelsea, where the social side of the meeting was again stressed, Dr. Spencer, Chief Inspector, L.C.C., being the guest of honour at the dinner which followed the general meeting. Members were received by Mrs. Dix and Dr. Curzon, Chairman, to whom and to Dr. Dix much thanks are due for the success of the function.

The subject of Dr. Spencer's address was "Some Practical Problems connected with the Training of Teachers, reviewing specialization, examinations, open-air classes, the school journey, and educational visits from the point of view of the administrator as well as the practical educationist, and leaving little scope for critical discussion.

Three committee meetings were held at the London Day Training College during the year, and members wish to thank Miss Punnett and staff for the use of their room.

Retiring members of Committee are Dr. d'Arcy Chapman (St. Mark and St. John), Miss Hopkins (Brighton Diocesan), Miss Stephenson (Salisbury), and Miss Ward (Stockwell).

SECTION REPORTS, 1927.

English.

A general meeting of the English Section was held at the University College, Gower Street, on January 6th, 1927.

The meeting decided to withdraw the request for a deputation to the Board of Education to discuss the language paper set by them.

Two other resolutions were passed.

The first was "That the Council of the T.C.A. be asked to forward to the Board of Education a request that one or more literary subjects should be included in the advanced essay papers to be set in 1927."

The second resolution, following on a discussion on schemes of work and syllabuses in English, moved "That all colleges who were working on English syllabuses other than those set by the Board of Education should be asked to forward copies of them to the general convener that she might have them re-duplicated for circulation and discussion among the various branches of the Association."

The request to the Board about the advanced essay papers was duly forwarded by the Council, but the Examinations Committee for the Board found themselves unable to adopt the suggestion, their view being that "the essential value of the essay paper is that it can test, and therefore stimulate the students' power of thinking and writing about things that he has experienced in life and not in literature."

With regard to the second resolution the syllabuses and schemes of work have been re-duplicated and circulated and have formed the chief topic of discussion at the various branch meetings.

Thus the main work of the English section throughout the year has been directed towards making the colleges in the different branches acquainted with one another's views and work and enabling them to discuss the principles underlying the choice of reading matter.

Reports on these discussions have come in from the North-Western, North-Eastern, Midland, and Eastern Branches, and these have been summarized and filed for reference and information.

French.

A discussion took place on the division of time between the oral and the written language, and between language and literature. There was also a discussion on class books and library books, and several valuable suggestions as to method were made by the members.

Miss Thomson (Derby) was elected General Convener for 1928 in succession to Miss Booth (Ripon), retired.

History.

The year has seen no startling developments, but meetings have been held in all branches, and these, especially in the Southern Branch, have usually been well attended. Discussions have taken place on the subjects arranged for study in 1927, viz., "The Approach to History for Children under Nine," and "The Teaching of 'History Method.'" Thought has been stimulated, but nothing worthy of print has yet been produced.

In July all branches except the North-Eastern replied to a questionnaire on "Commonwealth History," sent out in connection with the Imperial Education Conference. A meeting of the conference, to which representatives of teachers in different types of institutions were invited, was attended by the General Convener. The results of the attention thus drawn to "Commonwealth History" appear in our proposals for work in 1928.

During the year several members have borrowed the school syllabuses which were collected in 1926. These are still available for those who wish to see them.

In October branch conveners were invited to meet at Furzedown Training College for an evening and a morning session. The results of the meetings, at which all conveners except from the North-Eastern were present, appear in the proposals for reforms in the constitution and the plans for 1928, presented at the annual meeting of the Section just held.

Mathematics.

At the annual meeting of the Section last January the Convener reported that the Section was passing through a period of inactivity, and suggested that the chief cause of this was the infrequency with which it is possible to hold branch meetings. It was suggested that discussions at meetings should be supplemented by the carrying out of inquiries conducted partly by postal discussion, and that the Section should issue reports. It was pointed out that the investigational side of T.C.A. activities had been too much neglected, although it was under the auspices of the Association that the principal British journal devoted to educational research was published. The problems of most immediate concern for the Mathematics Section at present were connected with the reorganization of the mathematical course in training colleges, and it was resolved "That the General Section undertake a definite investigation connected with mathematical courses in training colleges."

Representatives of various branches then undertook to organize discussions in their respective branches as follows:

Eastern Branch:
"The Purposes of the Mathematical Course."
North-Eastern Branch:
"Improvement of Mathematical Work in Elementary Schools."
Southern Branch:
"Syllabus."

These branches reported and their findings were summarized in an interim report issued in October.

A very comprehensive questionnaire on training college courses in mathematics was sent to all colleges of the Association. Eight colleges have replied.

At the annual meeting of the Section later a committee to carry on this inquiry was appointed consisting of the General and all Branch Conveners in Mathematics, together with any members whom the Conveners may wish to co-opt.

There appears to be many lecturers in mathematics who do not belong to the Mathematics Section, and we should like to urge them to become members and to assist in the inquiries which the Section undertakes.

Music.

A meeting was held at Whitelands College on June 17th to discuss new examination conditions. Owing to a report that the Board might be continuing to examine music and art in the training colleges, it was arranged that a questionnaire should be sent out to the members of the Music Section, asking their opinion on this question. After the replies had been received, a large majority being in favour of the Board examining, it was found that the Board had definitely stated that it would not continue to examine these subjects.

The annual meeting on January 2nd, 1928, was again mainly concerned with the new examination regulations. Anxiety was expressed at the meeting lest music should not take its place on an equality with the other subjects, particularly in colleges attached to a university where there is no chair of music. It was decided that a question should be put at the general meeting on January 5th, asking if there were available information on this point, in the case of colleges that already had their examination schemes arranged.

Philosophy and Psychology.

This Section has now become established on a firm basis. Branch section meetings in various branches have been held during the year, which has seen the publication of a draft syllabus in psychology for two-year colleges, prepared by a Joint Sub-Committee of the Education Committee of the British Psychological Society and the T.C.A. This syllabus is being discussed by members of the Section and was the main topic for the annual meeting of the Section.

The Convener for 1928 is Miss Phillips, Homerton.

ESTABLISHMENT OF TWO GOVERNMENT TRAINING COLLEGES IN SOUTHERN NIGERIA.

Vacancies for Four Women Teachers.

Salary.—At rate of £480 for three years and then £510 a year rising by annual increments of £30 to £720.

Quarters.—Free quarters or allowance in lieu.

Passages.—Free.

Two of the women teachers should be fully trained in infant school methods, holding Board of Education certificates.

Preference will be given to women graduates who have taught in an English training college.

Duties to commence in October, 1928.

Further particulars from the Private Secretary, Appointments Department, Colonial Office, S.W.1.

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